KARNATAKA

Substantial part of the Western Ghats lie in Karnataka. Most of the 26 endemic birds of the Western Ghats are found in Karnataka

Karnataka (11º 30' - 18º 25' N and 74º 10' - 78º 35' E) has a geographical area of 19.18 million ha constituting 5.83% of the total area of the country. It is the eighth largest state in the country and ranks ninth in human population. Bangalore, the capital of Karnataka, now known Bengaluru, has a flourishing information technology industry and is known as India's Silicon Valley. The name Karnataka is derived from Karunadu, which means lofty land. If we see the physiography of the State, most of the State is plateau land which justifies the name.

Some of the important crops of the State are coffee, ragi, rice, jowar, millet, groundnut, sesame and oilseed. Agriculture and other activities generate about 49% of the State income (Mathew 2003). The State can be divided into two regions, the 'Maland' or hilly region comprising mainly the Western Ghats, and the 'Maidan' or the plain region comprising the inland plateau of varying heights. The major rivers of the State are the Cauvery, Tungbhadra, Krishna, Sharavati and Kalinadi. All these rivers flow eastward and fall into the Bay of Bengal.

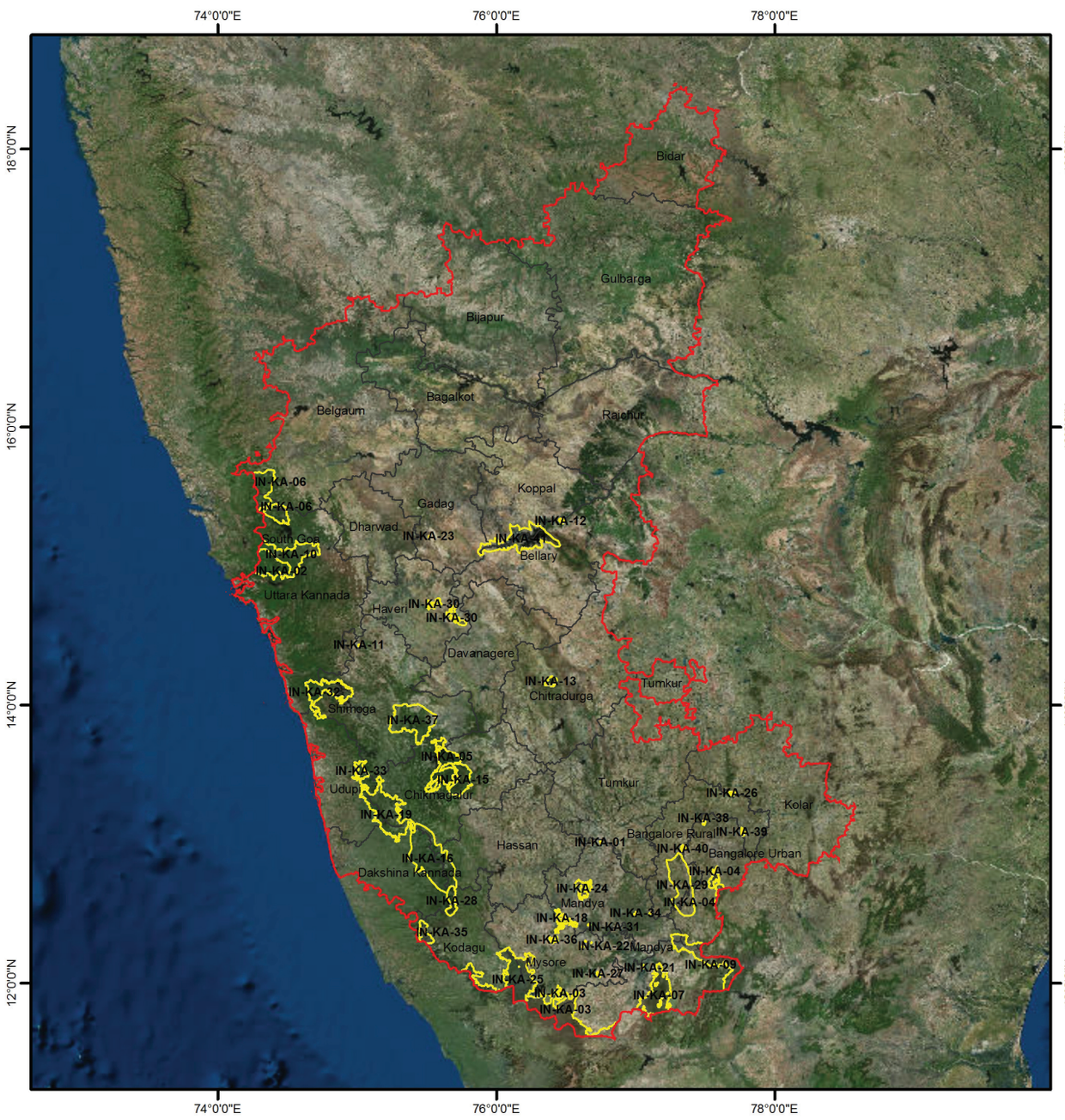
The rainfall in Karnataka varies from 450 mm in the drier northeastern plateau to 3,200 mm in the Western Ghats. Summer and winter temperatures vary from 26 ºC to 35 ºC and 14 ºC to 25 ºC respectively. As per the Forest Survey of India report of 2001, there are 27,066 villages in the state of which 7,130 directly depend on the forest land. The forest area in these villages is 2.74 million ha. The total population of these villages is 9.31 million.

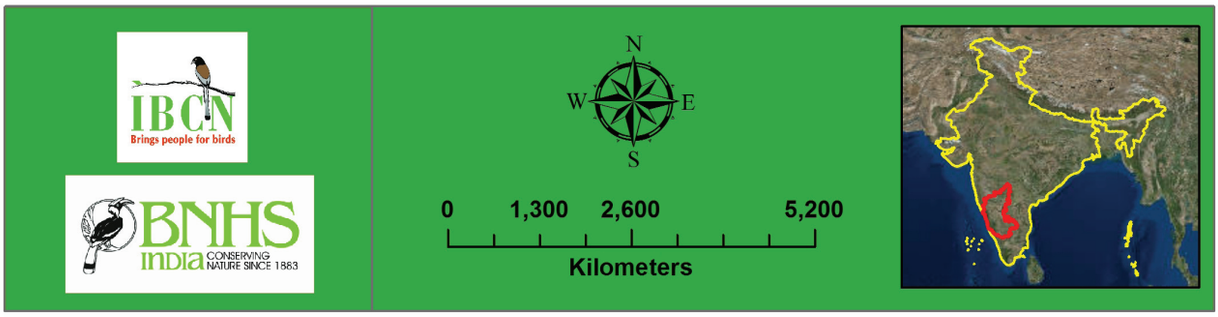
According to the 2011-Census, the total population of the State is 61,130,704 (5.1% of India's population), of which the rural population is 66% and the urban population is 34% (Ministry of Environment and Forests 2013). The tribal population constitutes 4.3% of the State's population. The estimated population density of the State is 320 persons per sq. km. Bengaluru has the maximum population among the 27 districts of Karnataka (10,178,146 in 2014). The livestock population is 30,859 million (6.3% of India's livestock population) and state wise fish production during the period 2004-05 to 2011-12 was 2,993.88 tonnes (Source: 18th Livestock Census, Department of Animal Husbandry, Dairying & Fisheries, Ministry of Agriculture (2012-13).

Vegetation

Karnataka has five major forest types: Tropical Wet Evergreen, Tropical Semi-evergreen,ical Moist Deciduous, Tropical Dry Deciduous, and Tropical Thorn Forest. Most

Important Bird Areas in Karnataka





M.D. MADHUSUDAN

Karnataka has some of the best protected areas and important IBAs of India. Unfortunately the major amphisis of conservstion is on large vertebrates, and not much attention is giving to birds, reptiles, amphibians and endemic and threatened plants. Some of the endemic and threatened species needs special conservation actions

of the forest in Karnataka is situated in a belt running from north to south starting from Belgaum and ending in Mysore (Mysuru). The State ranks fourth among all the States and Union Territories in respect of area under tree cover (Ministry of Environment and Forests 2013). A large number of hills and hill ranges dot the island plateau area. According to the Forest Survey of India report of 2013, the recorded forest area is 3.83 million ha which constitutes 20.2% of the geographical area of the State. Reserved forest constitutes 28,611,00 ha (73.8%), protected forest 3,932,00 ha (10.2%), and unclassed forest 6,181,00 ha (16%). 60% of Western Ghats are located in Karnataka.

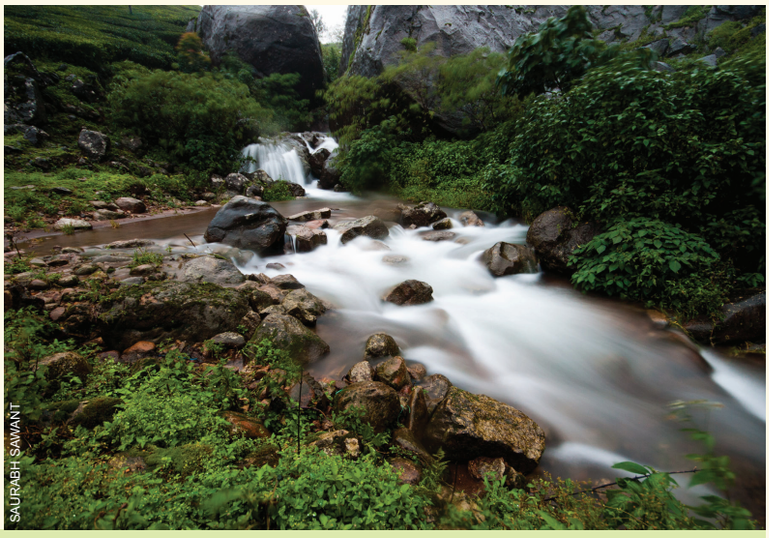
Karnataka coastline extends over a length of 320 kilometers with numerous river mouths, lagoons, bays, creeks, cliffs, sand dunes and long beaches. Karnataka has no major delta formations. The shelf of Karnataka has an average width of 80 kilometers and the depth of shelf break is between 90 and 120 meters. There are 26 estuaries

Saraca asoca and *Glorisa superba*. Karnataka has 176 species of orchids from 49 genera; most of them are threatened and are brought under Wildlife Protection Act. Some of the orchids found in Western Ghats are *Aerides erispa*, *calautne sylvatica*, *Derdrbium aquem*, *Eria albiflora*, and *oberonia bieormis* (Karnataka Biodiversity Board 2010).

The fish fauna of Karnataka is represented by 300 freshwater and 405 marine species. They have been grouped under 23 Orders, 106 families and 241 genera (Karnataka Biodiversity Board 2010).

In a survey conducted during 2005–2006 a total of 89 coral associated fishes were recorded from the area in which 27 species and four genera were the new records from the Indian coast. Out of the nine grouper fish species identified from Netrani Island, located nearly 19 km away from the mainland, off Murdeshwar Sea, two species *Cheilinus undulatus* (Endangered) and *Rhincodon typus* (Vulnerable) are included in the IUCN Red List.

DHRITIMAN MUKHERJEE


SAURABH SAWANT

Thick forests and grasslands of the Western Ghats are a source of many major rivers of peninsular India

with more than 70,000 ha water spread area and 8000 ha of brackish water area, making the three coastal districts of Karnataka very rich in marine, estuarine and riverine biodiversity. The mangroves species available in the coastal zone of Karnataka are *Rhizophora mucronata, Acanthus elicifolius, Acrostichum aureum, Aegiceras corniculatum, Avicennia marina, Avicennia officinalis, Bruguiera cylindrical. Racemosa, Excoecaria, Agallocha, Protersia, Coaretata, Bruguiera, Rhizophora apiculata, Sonneratia alba***.** Fourteen rivers which originate in Western Ghats run westwards and join the Arabian sea.

Forests of Karnataka harbours 1493 medicinal plants belonging to 808 genera and 108 families. They occur in different vegetation types across the Western Ghats. Some of the medicinal plants are on the verge of extinction due to unsustainable harvest and lack of knowledge. A few example of such unsustainable harvest are *Rauvolfia serpentine*,

IBAs AND PROTECTED AREAS

There are five national parks and 21 wildlife sanctuaries in Karnataka, constituting about 17.3% area of the State under protected system. The national parks cover 2,47,218 ha while sanctuaries cover about 3,93,061 ha. Rodgers *et al.* (2000) have suggested addition of two national parks and seven wildlife sanctuaries. In 2004, 37 IBAs were described in Karnataka (Islam and Rahmani 2004). Four more sites have been identified that fulfill the IBA criteria (Hassargatha, Haskote, Tungabhadra and Thippagonanahalli). One earlier IBA, Arabhithittu Wildlife Sanctuary, does not qualify the criteria as the original description was based on errorneous report of the trigger species, Yellow-throated Bulbul *Pycnonotus xantholaemus* (A1 criteria). Subsequent studies reveal that it is not found there. There is no other criterion that fits this IBA. For serial record purpose, we are keeping the name in the list but not describing it in detail.

Important Bird and Biodiversity areas in Karnataka		
IBA site codes	**IBA site names**	**IBA criteria**
IN-KA-01	Adichunchunagiri Wildlife Sanctuary	A1, A2
IN-KA-02	Anshi National Park	A1, A2, A3
IN-KA-03	Bandipur National Park	A1, A2
IN-KA-04	Bannerghatta National Park	A1, A2
IN-KA-05	Bhadra Tiger Reserve	A1, A2
IN-KA-06	Bhimgad Wildlife Sanctuary & Castle Rock	A1, A2, A3
IN-KA-07	Biligiri Rangaswamy Temple Tiger Reserve	A1, A2, A3
IN-KA-08	Bramhagiri Wildlife Sanctuary	A1, A2, A3
IN-KA-09	Cauvery Wildlife Sanctuary	A1, A2, A3
IN-KA-10	Dandeli Wildlife Sanctuary	A1, A2, A3
IN-KA-11	Gudavi Wildlife Sanctuary	A1, A2, A4i
IN-KA-12	Hampi and Daroji Bear Sanctuary	A1, A2
IN-KA-13	Jogimatti State Forest	A1, A2
IN-KA-14	Karanji Tank	A1, A4i
IN-KA-15	Kemmangundi and Bababudan Hills	A1, A2, A3
IN-KA-16	Kemphole Reserve Forest	A2, A3
IN-KA-17	Kokkare Bellur	A1, A4i
IN-KA-18	Krishnarajasagar Reservoir	A1, A4i, A4iii
IN-KA-19	Kudremukh National Park	A1, A2, A3
IN-KA-20	Kukkarahalli Tank	A1, A3
IN-KA-21	Kunthur-Kallur Lakes	A1, A4i, A4iii
IN-KA-22	Lingambudhi Lake	A1, A4i, A4iii
IN-KA-23	Magadi and Shettikere Wetlands	A1, A4iii
IN-KA-24	Melkote Temple Wildlife Sanctuary	A1, A2
IN-KA-25	Nagarhole National Park	A1, A2, A3
IN-KA-26	Nandi Hills	A1, A2, A3
IN-KA-27	Narasambudhi Lake	A1, A4i
IN-KA-28	Pushpagiri Wildlife Sanctuary	A1, A2, A3
IN-KA-29	Ramanagara State Forest	A1, A2
IN-KA-30	Rannebenur Blackbuck Sanctuary	A1
IN-KA-31	Rangananthittu Bird Sanctuary	A1, A4i
IN-KA-32	Sharavathi Valley Wildlife Sanctuary	A1, A2, A3
IN-KA-33	Someshwara Wildlife Sanctuary	A1, A2, A3
IN-KA-34	Sulekere Lake	A1, A4i, A4iii
IN-KA-35	Talakaveri Wildlife Sanctuary	A1, A2, A3
IN-KA-36	Arabhithittu Wildlife Sanctuary (delisted)	A1
IN-KA-37	Shettihalli Wildlife Sanctuary	A1, A3
IN-KA-38	Hassargatha	A1
IN-KA-39	Haskote	A1
IN-KA-40	Thippagonanahalli Reservoir	A1
IN-KA-41	Tungabhadra	A1, A4i

Potential Ramsar sites in Karnataka		
Site name	IBA Criteria	**Ramsar Criteria**
Gudavi Bird Sanctuary	A1, A2, A4i	Criteria R2, R4, 6
Karanji Lake	A1, A4i	Criteria R2, R4, R6
Kokkare Bellur	A1, A4i	Criteria R2, R4, R6
Krishnarajasagar Reservoir	A1, A4i, A4iii	Criteria R2, R4, R5, R6
Kukkarahalli Tank	A1, A3	Criterion R2
Kunthur-Kallur Lakes	A1, A4i, A4iii	Criteria R2, R4, R5, R6
Lingambudhi Lake	A1, A4i, A4iii	Criteria R2, R4, R5, R6
Magadi and Shetikere Wetlands	A1, A4iii	Criteria R2, R4, R5
Narasambudhi Lake	A1, A4i	Criteria R2, R4, R6
Rangananthittu Bird Sanctuary	A1, A4i	Criteria R2, R4, R6
Sulekere Lake	A1, A4i, A4iii	Criteria R2, R4, R5, R6

Malabar Pit Viper Trimeresurus malabaricus occurs in many colour morphs and endemic to Western Ghats from southern Maharashtra to Kanyakumari in Tamil Nadu. It is fairly common in Agumbe. IBAs not only protect birds but all biodiversity

Raorchestes nerostagona

Raorchestes

Macro_Rhacophorus malabaricus

Duttaphrynus parietalis amplexus

Western Ghats is famous for its frog diversity. New species are been described almost every year

List of threatened birds with IBA site codes		
Critically Endangered		
White-rumped Vulture (*mostly old records*)	*Gyps bengalensis*	IN-KA-01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 13, 15, 17, 18, 21, 22, 24, 25, 26, 27, 29, 30, 31, 32, 37
Long-billed Vulture (*mostly old records*)	*Gyps indicus*	IN-KA-01, 03, 04, 05, 06, 07, 09, 11, 15, 24, 25, 26, 29
Red-headed vulture	*Aegypius calvus*	IN-KA-03, 04, 07, 08, 09, 25, 26
Great Indian Bustard	*Ardeotis nigriceps*	IN-KA-30 (Locally extinct)
Endangered		
Egyptian Vulture	*Neophron percnopterus*	IN-KA-01, 03, 07, 10, 18, 22, 23, 24, 25, 26, 27, 29, 31, 32, 38, 39, 40
Lesser Florican	*Sypheotides indicus*	IN-KA-38
Black-bellied Tern	*Sterna acuticauda*	IN-KA-03, 09, 12, 20, 21, 25, 27, 40, 41
Nilgiri Blue Robin	*Myiomela major*	IN-KA-05, 07, 08, 15, 19, 35(?)
Banasura (Black-chinned) Laughingthrush	*Strophocincla jerdoni*	IN-KA-08, 28
Vulnerable		
Asian Woollyneck	*Ciconia episcopus*	IN-KA-02, 03, 07, 10, 11, 12, 18, 22, 23, 24, 25, 27, 30, 31, 33, 38, 39, 40, 41
Lesser Adjutant	*Leptoptilos javanicus*	IN-KA-03, 05, 10, 20, 25, 33
Greater Spotted Eagle	*Aquila clanga*	IN-KA-01, 03, 04, 09, 11, 18, 21, 22, 24, 25, 27, 31, 38, 39
Indian Spotted Eagle	*Clanga hastata*	IN-KA-04, 09, 22, 24, 25, 27, 29, 31, 38, 39, 40
Eastern Imperial Eagle	*Aquila heliaca*	IN-KA-22
Wood Snipe	*Gallinago nemoricola*	IN-KA-19
Nilgiri Wood-pigeon	*Columba elphinstonii*	IN-KA-02, 03, 04, 05, 07, 08, 09, 10, 15, 19, 25, 26, 28, 32, 35
Yellow-throated Bulbul	*Pycnonotus xantholaemus*	IN-KA-01, 03, 04, 07, 09, 12, 13, 24, 26, 29, 36
Broad-tailed Grassbird	*Schoenicola platyurus*	IN-KA-03(?), 05, 07, 15, 19, 35
White-naped or Pied Tit	*Parus nuchalis*	IN-KA-03, 07, 09
Near Threatened		
Spot-billed Pelican	*Pelecanus philippensis*	IN-KA-01, 03, 04, 12, 14, 17, 18, 20, 21, 22, 23, 24, 27, 31, 34, 39, 40, 41
Oriental Darter	*Anhinga melanogaster*	IN-KA-02, 03, 04, 05, 09, 10, 11, 12, 14, 18, 20, 21, 22, 23, 24, 25, 27, 31, 32, 34, 39, 41
Painted Stork	*Mycteria leucocephala*	IN-KA-01, 03, 04, 07, 09, 11, 12, 14, 17, 18, 20, 21, 22, 23, 24, 25, 27, 30, 31, 34, 38, 39, 40, 41
Black-headed Ibis	*Threskiornis melanocephalus*	IN-KA-01, 03, 04, 07, 09, 10, 11, 12, 14, 17, 18, 20, 21, 22, 23, 24, 25, 27, 30, 31, 38, 39, 40, 41
Lesser Fish-eagle	*Ichthyophaga humilis*	IN-KA-02(?), 03, 06, 09, 10, 33
Grey-headed Fish-eagle	*Ichthyophaga ichthyaetus*	IN-KA-03, 06, 07, 10, 11, 25
Himalayan Griffon	*Gyps himalayensis*	IN-KA-38(?)
Pallid Harrier	*Circus macrourus*	IN-KA-01, 03, 04, 06, 08, 11, 18, 27, 30, 31, 38, 39, 40, 41
Red-headed Falcon	*Falco chicquera*	IN-KA-03, 04, 07, 12, 17, 18, 22, 23, 24, 25, 27, 31, 39, 41
Great Thick-knee	*Esacus recurvirostris*	IN-KA-03, 09, 11, 18, 22, 23, 24, 25, 40
Eurasian Curlew	*Numenius arquata*	IN-KA-01, 03, 18, 20, 21, 22, 41
Black-tailed Godwit	*Limosa limosa*	IN-KA-01, 18, 21, 27, 31, 34, 38, 39, 41
River Tern	*Sterna aurantia*	IN-KA-03, 10, 11, 12, 18, 21, 22, 23, 25, 31, 38, 39, 40, 41
Alexandrine Parakeet	*Psittacula eupatria*	IN-KA-03, 09, 23, 24, 25, 27, 30, 38, 40
European Roller	*Coracias garrulus*	IN-KA-38
Malabar Pied Hornbill	*Anthracoceros coronatus*	IN-KA-02, 03, 05, 06, 08, 10, 11, 19, 32
Great Pied Hornbill	*Buceros bicornis*	IN-KA-02, 05, 06, 10
Grey-headed Bulbul	*Pycnonotus priocephalus*	IN-KA-03, 05, 06, 07, 08, 11, 16, 19, 28, 32, 35
Palni or Grey-breasted Laughingthrush	*Strophocincla*	IN-KA-08, 15, 19, 28, 35
	(*Trochalopteron*) *fairbanki*	
Black-and-Orange Flycatcher	*Ficedula nigrorufa*	IN-KA-08, 10, 15, 19, 28, 35
Nilgiri Flycatcher	*Eumyias albicaudata*	IN-KA-02(?), 05, 08, 15, 19, 28, 32, 35
Tytler's Leaf-warbler	*Phylloscopus tytleri*	IN-KA-02, 15

SAURABH SAWANT

High altitude grasslands (above) and Myristica swamps (below) are unique habitats of the Western Ghats

SAURABH SAWANT

Endemic Bird Area 123: Western Ghats		
Nilgiri Wood-Pigeon	*Columba elphinstonii*	IN-KA-02, 03, 05, 07, 09, 10, 15, 19, 25, 28, 32, 35
Grey-fronted Green-pigeon	*Treron affinis*	Widely distributed in almost all IBAs
Malabar Parakeet	*Psittacula columboides*	IN-KA-02, 03, 05, 06, 07, 08, 09, 10, 11, 15, 16, 19, 25, 28, 32, 33, 35
Malabar Grey Hornbill	*Ocyceros griseus*	IN-KA-02, 03, 05, 06, 08, 10, 11, 15, 16, 19, 25, 28, 32, 33, 35
Malabar Barbet	*Megalaima malabarica*	IN-KA-06, 11, 32 and widely distributed
Grey-headed Bulbul	*Pycnonotus priocephalus*	IN-KA-03, 05, 06, 07, 08, 11, 15, 16, 19, 28, 32, 35
Flame-throated Bulbul	*Pycnonotus gularis*	Widely distributed in many IBAs
Nilgiri Blue Robin	*Myiomela x major*	IN-KA-05, 07, 08, 11, 15, 19, 35(?)
Wynaad Laughingthrush	*Garrulax delesserti*	IN-KA-06, 07, 08, 11, 15, 16, 19, 28, 32
Banasura Laughingthrush	*Strophocincla jerdoni*	IN-KA-08, 19, 15, 28, 35
Indian Rufous Babbler	*Turdoides subrufus*	IN-KA-05, 06, 07, 08, 10, 15, 16, 19, 25, 28, 32, 35
Broad-tailed Grassbird	*Schoenicola platyura*	IN-KA-15, 19, 35
Black-and-Orange Flycatcher	*Ficedula nigrorufa*	IN-KA-07, 08, 15, 28, 35
Nilgiri Flycatcher	*Eumyias albicaudata*	IN-KA-08, 15, 19, 28, 32, 35
White-bellied Blue Flycatcher	*Cyornis pallipes*	IN-KA-02, 03, 05, 06, 08, 09, 15, 16, 19, 28, 32, 33, 35
Malabar Woodshrike	*Tephrodornis sylvicola*	Widely distributed in many IBAs
Vigor's Sunbird	*Aethopyga vigorsii*	IN-KA-32
Small Sunbird	*Nectarinia minima*	IN-KA-02, 03, 05, 06, 08, 10, 15, 16, 19, 28, 32, 33, 35
Nilgiri Flowerpecker	*Dicaeum concolor*	Widely distributed in many IBAs
Malabar Starling	*Sturnia blythii*	Widely distributed in many IBAs
White-bellied Treepie	*Dendrocitta leucogastra*	IN-KA-02, 03, 05, 06, 08, 11, 15, 16, 19, 25, 28, 32, 35
Secondary Area s072: Southern Deccan Plateau		
Yellow-throated Bulbul	*Pycnonotus xantholaemus*	IN-KA-01, 04, 07, 09, 12, 13, 24, 26, 29

Koppa Wetland. No Ramsar Site has been recommended by the Government of Karnataka. Islam and Rahmani (2008) have identified 11 IBA sites that qualify the Ramsar Criteria.

THREATENED BIRDS FOR WHICH KARNATAKA IS VERY IMPORTANT

A substantial part of the Western Ghats Endemic Bird Area (EBA 123) lies in Karnataka and most of the endemic bird species of the Western Ghats are found in the IBAs of Karnataka. Some of the wetland IBAs are very important for Spot-billed Pelicans. For the following species, Karnataka holds significant populations and habitats.

Spot-billed Pelican *Pelecanus philippensis*
Near Threatened

Karnataka is one of the states that harbours considerable breeding populations of the Spot-billed Pelican. During the last 20-25 years, the species has shown remarkable recovery due to protection by local communities and Forest Department. From being Vulnerable it has been downlisted to Near Threatened. Protection of nesting colonies located in Karnataka, along with Tamil Nadu, has played a major role in this recovery of the population. Some of the important nesting and foraging sites are Kokkare Bellur; Karanji Lake, Kukkarahalli Tank, Lingambudhi Lake. Sulekera Tank, Mulavalli Tank, Koppe Tank and Shetty Tank. Some of them are IBAs.

Yellow-throated Bulbul *Pycnonotus xantholaemus*
Vulnerable

This bulbul inhabits sparse thorn scrub, interspersed with some large trees among broken stony hillocks (Ali and Whistler 1942-1943). It is endemic to southern peninsular India, where it is patchily distributed (Gaston 1985, Subramanya *et al.* 1995). It is considered Vulnerable (BirdLife International 2014) because of its fragmented population and the degradation of its scrub and forest habitats. From Karnataka the species has been recorded from Nandi hills (Subramanya *et al.* 1991); Kanganahalli betta, Kendatti State Forest (S. Subramanya, *pers. comm.* in 2014); Adichunchunagiri, (Prasad *et al.* 1991); Ragihalli State Forest (S. Subramanya, *pers. comm.* 2003) and Biligirirangan hill, (Karthikeyan *et al.* 1995). Most up to date account on Yellow-throated Bulbul can be obtained from Subramanya *et al.* (2004) and Rahmani (2012).

Nilgiri Wood-Pigeon *Columba elphinstonii*
Vulnerable

This Pigeon is having a small and declining population because of widespread destruction of its forest habitat. This Vulnerable species is one of the 26 endemic species of the Western Ghats, which occur in the evergreen biotope from Anamalai to Mumbai. In Karnataka, it is reported from 35 IBAs, such as Castle Rock, Anshi National Park, Nandi Hills, Bannerghataa National Park, and Bandipur National Park. A relict population has been found at Nandi Hills which is

SAMAD KOTTUR

well separated from rest of the known distributional range of the species.

RESTRICTED RANGE SPECIES

Many of the IBAs fall in the Endemic Bird Areas of the Western Ghats (EBA-123) where the key habitats are Lowland Evergreen Rain Forest, Montane Evergreen Forest and Montane Grassland. In this EBA, 16 restricted range species have been reported by BirdLife International (Statterfield *et al.* 1998), out of which 15 species are found in the IBAs of Karnataka. However, due to taxonomic changes and upgradation of subspecies in to full species, now 26 species of birds are endemic to the Western Ghats (Rasmussen and Anderton 2005, 2012, del Hoyo and Collar 2014). Out of these 26 species, 21 are found in Karnataka.

One Secondary Area (s072 Southern Deccan Plateau) also falls in Karnataka for the Yellow-throated Bulbul *Pycnonotus xantholaemus*.

Biomes

Two biomes occur in Karnataka, (i) Biome-10: Indian Peninsula Tropical Moist Forest, and (ii) Biome-11: Indo-Malayan Tropical Dry Zone. Biome-10 has Lowland Evergreen Rain Forest, Semi-evergreen Rain Forest, Moist Deciduous Forest and Hill Evergreen Forest with an elevation of *c.* 1000 m. Out of 15 species of Biome-10, 12 species are definitely reported from the State. They are Small Green Malkoha *Phaenicophaeus viridirostris*, Jerdon's Nightjar *Caprimulgus atripennis*, Indian Edible-nest Swiftlet *Collocalia unicolor*, Malabar Tragon *Harpactes fasciatus*, Malabar Pied Hornbill *Anthracoceros coronotus*, White-cheeked Barbet *Megalaima viridis*, Crimson-throated Barbet *Megalaima rubricapilla*, Yellow-browed Bulbul *Iole indica*, Malabar Whistling-thrush *Myiophonus horsfieldii*, Indian Scimitar Babbler *Pomatorhinus horsfieldii*, Loten's Sunbird *Nectarinia lotenia* and Black-throated Munia *Lonchura kelaarti*. BirdLife International (undated) has reported 59 species in Biome-11. Biome-11 is spread over a huge area of dry zone in Karnataka in the Daccan region. This biome includes a wide range of habitats, including both forests and open country. Most of the species present in this biome are widespread and common. Nearly 50 species of this biome are found in Karanata, the list is too long to be included here.

THREATS AND CONSERVATION ISSUES

Karnataka has many active NGOs (many are IBCN partners) and individuals, who along with the Forest Department, work towards conservation of birds and their habitats. Karnataka also has some of the best managed protected areas of India, visited by large number of tourists and researchers. Bangaluru is the centre of wildlife research institutes and NGOs. Promotion of wildlife research in the state fluctuates, depending upon the Chief Wildlife Warden, but generally it is good.

There are many conservation issues in the state that need to be addressed. Rapid industrialization and expansion of cities has destroyed many urban wetlands. For example, in Bangaluru, 'the Silicon Valley of India', nearly 50 percent of the wetlands do not exist, the victim of real estate development. The remaining wetlands are under constant threat. Hassarghata, newly recognized IBA, is a classical example.

The Kaiga Atomic Power Station has caused water pollution of the Kaneri river, which flows on the north side of the Anshi National Park. Besides, there is a problem of water scarcity in summer, since most of the waterways dry up by February. Check dams have been constructed across many streams for soil and water conservation.

The Biligiri Rangaswamy Temple Wildlife Sanctuary is an important hill-forest habitat of southern Karnataka, well

Dry scrub forests in boulder-strewn low hills of the Deccan Plains have their own unique biodiversity. The endemic Yellow-throated Bulbul *Pycnonotus xantholaemus* if found here

known for its Asiatic Elephant population, medicinal plant diversity, many threatened and restricted range bird species, the Soliga tribal, and the ancient temple itself. Several tribal hamlets have been in these forests for generations, and continue to stay there, possibly since the Forest Department realizes that they do no appreciable damage to the wildlife or its habitat. Earlier Soliga used to practice shifting cultivation (slash and burn) but this practice is almost abandoned to settled life. They mainly grow Finger millet locally called Ragi (*Eleusine coracana*) but also depend heavily on Minor Forest Products such as timer and honey. Crop damage by elephants is a major their concern, that is why many have agreed to shift outside the protected area where their crops and life are more safe. Many hamlets are still present inside the forests. They have been given land under the Forest (Rights) Act. The land, anyway, was theirs as they have been living there for many generations.

Kokkare Bellur is a successful example of bird conservation in Karnataka, but there are some problems to be addressed there too. Kokkare Bellur is one of the better known examples of a people-initiated conservation effort. A few members of the Mysore Amateur Naturalists (MAN), a local NGO, have been living in Kokkare Bellur and have reported that nesting areas in the village are being threatened. Attempts have been made by MAN to establish a nursery for the chicks that fall out of nests due to various disturbances. A recent problem is the increase in the number of crows in the village that constantly prey upon on the eggs and chicks. The storks are easily disturbed by the presence of outsiders as they move about the nesting sites (though apparently not by the movement of the local villagers). Mysore Amateur Naturalists has appealed for help in tackling the crow problem.

Iron ore (magnetite) mining by the Kudremukh Iron Ore Corporation Limited (KIOCL) in the vicinity of Kudremukh National Park is a major conservation issue of the State in which conservationists have battled the State Government and KIOCL. At the intervention of the Supreme Court, further mining lease has been cancelled and mining was stopped in December 2005. Important rivers originating in the area have been silted at many places. Now National Mineral Development Corporation Ltd. (NMDC) supplies the iron ore. There is a plan to merge NMDC with KIOCL.

The Western Ghats of Karnataka, like in Tamil Nadu and Kerala, is the centre of speciation of the genus *Micrixalus* or Dancging Frogs of India. Recently, 14 new species of this genus have been described, many from Karnataka (Biju *et al*. 2014).

Western Ghats' unique Myristica swamp forests which are relict forests of ancient origin, characterized by first and second order perennial streams and evergreen forest vegetation (Chandran *et al*. 2010) need special attention for their protection as they harbor many unique species. Their slow moving streams are characterised by a network of modified knee roots of *Gymnacranthera canarica*, stilt roots of *Myristica fatua*, presence of rocks and boulders and intermittent puddles with sandy bottom. Many species of the ancient genera of frog, *Nyctibatrachus*, occur in the Myristica swamps (Gururaja *et al*. 2014).

In the 36th session of the World Heritage Committee (WHC) in St Petersburg in Russia, altogether 39 sites, mainly protected areas and IBAs, in the Western Ghats landscape were identified as World Heritage Sites. Kerala leads with 20 sites being inscribed in the Heritage list, followed by Karnataka with ten, Tamil Nadu five and Maharashtra four. The ten sites in Karnataka are as follows: Aralam Wildlife Sanctuary (IBA), Brahmagiri Wildlife Sanctuary (IBA), Talacauvery Wildlife Sanctuary (IBA), Padinalknad Reserved Forest, Kerti Reserved Forest, Kudremukh National Park (IBA), Someshwara Wildlife Sanctuary (IBA),

One of the habitats that is totally neglected for biodiversity research is cave despite the fact that many endemic species, such as Wroughton's Free-tailed Bat *Otomops wroughtoni*

Someshwara Reserved Forest, Agumbe Reserved Forest, and Balahalli Reserved Forest. It is hoped that this prestigious international tag will help in better protection of these sites through people's participation.

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KANNAN

Kokrebellur is one of the finest examples of community conservation. The villagers even feed and raise the fallen chicks to adulthood (inset picture).

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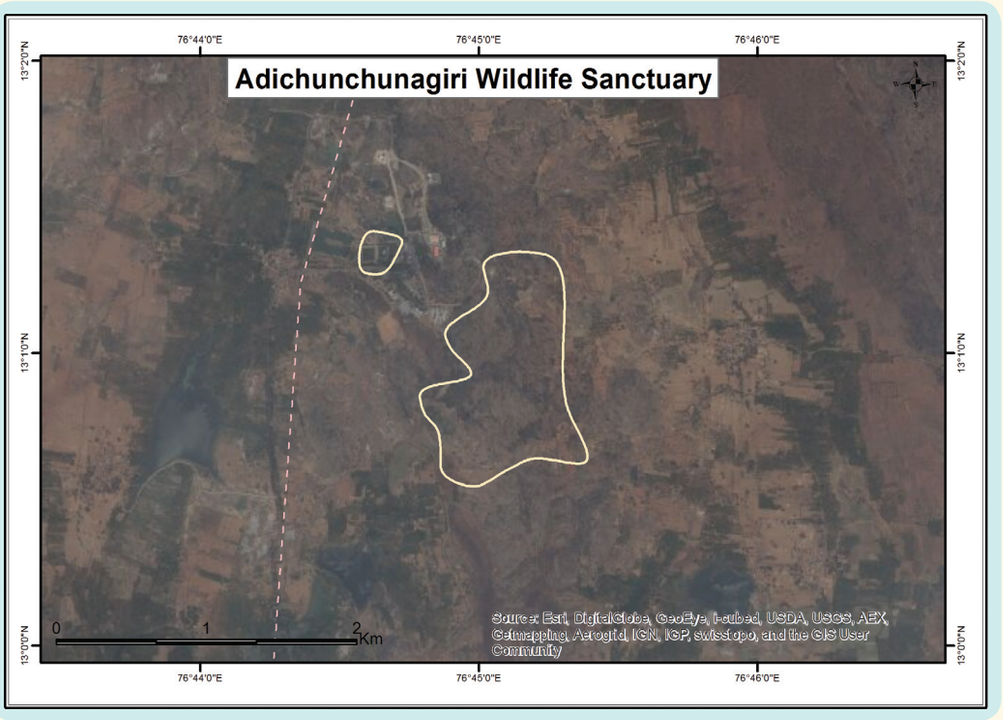
ADICHUNCHUNAGIRI WILDLIFE SANCTUARY

IN-KA-01

IBA Site	:	IN-KA-1	**Altitude**	:	800 msl
State	:	Karnataka	**Rainfall**	:	700 mm
District	:	Mandya	**Temperature**	:	14 ºC to 38 ºC
Coordinates	:	12º 55' 00" N, 76° 40' 00" E	**Biogeographic Zone**	:	Deccan Peninsula
Ownership	:	State	**Habitats**	:	Tropical Dry Deciduous Forest, Tropical Thorn Forest
Area	:	88 ha			

IBA CRITERIA: A1 (Threatened species), A2 (Secondary Area s072: Southern Deccan Plateau)

PROTECTION STATUS: Wildlife Sanctuary, established October, 1981.



GENERAL DESCRIPTION

This tiny sanctuary is situated near the Chunchunagiri Temple, a pilgrim centre in Mandya district. It consists of gently undulating terrain, scrub forests, and plantations. It is the only sanctuary in India declared especially for the peafowl, and is named *Mayur Vana* (Peafowl Forest) in the notification. People in the area are known to protect this bird due to religious sentiments.

The sanctuary has five seasonal streams and three perennial waterholes, of which one is natural and two artificial. It can be reached by road from Bengaluru to Nelligere (100 km) via Nagamangala, and then 12 km further on to the sanctuary.

Tropical Dry Deciduous Scrub and Southern Thorn Scrub are the major forest types (Rodgers & Panwar 1988). Most of the natural scrub forest was cleared to plant *Eucalyptus* before the declaration of the sanctuary. The dominant natural trees are *Acacia nilotica*, *Acacia leucophloea*, *Albizzia amara*, *Anogeissus latifolia*, *Azadirachta indica*, *Tamarindus indica*, and *Ficus* spp. *Calotropis gigantea* attracts many birds and butterflies.

AVIFAUNA

This sanctuary was selected as an IBA due to the presence of a good population of Yellow-throated Bulbul *Pycnonotus xantholaemus* (S. Subramanya, *pers. comm.* 2003). Although the site lies in Biome 11 (Indo-Malayan Tropical Dry Zone), it also has some species of Biome 10 (Indian Peninsula Tropical Moist Forest) such as Blue-faced Malkoha *Phaenicophaeus viridirostris*, White-cheeked Barbet *Megalaima viridis*, Loten's Sunbird *Nectarinia lotenia*, and Jerdon's Nightjar *Caprimulgus atripennis*.

VINAYAK YARDI

Yellow-throated Bulbul *Pycnonotus xantholaemus* is the trigger species for the selection of this area as an IBA

CRITICALLY ENDANGERED	
White-rumped Vulture	*Gyps bengalensis*
Long-billed Vulture	*Gyps indicus*
ENDANGERED	
Egyptian Vulture	*Neophron percnopterus*
VULNERABLE	
Greater Spotted Eagle	*Clanga clanga*
Yellow-throated Bulbul	*Pycnonotus xantholaemus*
NEAR THREATENED	
Spot-billed Pelican	*Pelecanus philippensis*
Painted Stork	*Mycteria leucocephala*
Black-headed Ibis	*Threskiornis melanocephalus*
Pallid Harrier	*Circus macrourus*
Black-tailed Godwit	*Limosa limosa*
Eurasian Curlew	*Numenius arquata*
SECONDARY AREA S072: SOUTHERN DECCAN PLATEAU	
Yellow-throated Bulbul	*Pycnonotus xantholaemus*

BirdLife International (undated) has identified 59 species under Biome 11 (Indo-Malayan Tropical Dry Zone), of which 13 have been seen in this site till now, most of them quite common and widely distributed.

The area once supported populations of *Gyps bengalensis, Gyps indicus*, and *Neophron percnopterus* (Prasad *et al*. 1991), but now they are not seen. Near Threatened species such as Spot-billed Pelican *Pelecanus philippensis* and Painted Stork *Mycteria leucocephala* have been recorded in tanks in the immediate vicinity of the sanctuary (Prasad *et al*. 1991). Black-headed Ibis *Threskiornis melanocephalus,* Pallid Harrier *Circus macrourus,* Greater Spotted Eagle *Clanga clanga,* Black-tailed Godwit *Limosa limosa*, and Eurasian Curlew *Numenius arquata* have also been sighted in the area (Shivaprakash, *pers. comm*. 2014). Prasad *et al*. (1991) listed 98 species of birds from the sanctuary. A new survey is required to see how many species are not found any more and how many new species are present which were not recorded earlier.

OTHER KEY FAUNA

Despite its small size (88 ha only), Adichunchunagiri Wildlife Sanctuary has many mammals, due to the protection provided by the temple authorities. Even Sloth Bear *Melursus ursinus* is reported here. The site has about 12 species of reptiles, five species of amphibians, and an interesting diversity of inverteberate fauna (Prasad *et al*. 1991).

LAND USE

- Plantations
- Religious centre

THREATS AND CONSERVATION ISSUES

- Excessive human interference
- Granite quarrying
- Developmental activity
- Vegetation denuded by increasing pressure from pilgrims

Except for the possible disturbance by pilgrims, there does not appear to be any major issue. Even this cannot be considered of any significance, because the sanctuary owes its existence to the temple. Peafowl move freely and are the main attraction for many pilgrims. Neighbouring villagers graze their cattle. Browsing on the shrub vegetation by a large population of goats from surrounding villages is a cause for concern. In recent years, increasing numbers of pilgrims are putting pressure on the forest. This can be stopped through the active involvement of the Temple trustees.

Two major threats have appeared in recent years: granite quarrying and construction of structures and buildings (S. Subramanya, *pers. comm*. 2014).

KEY CONTRIBUTORS

IBA Team, S. Subramanya, Adavanne Shivaprakash, T. Girija.

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ANSHI NATIONAL PARK

IN-KA-02

IBA Site	:	IN-KA-2	**Altitude**	:	200–927 msl
State	:	Karnataka	**Rainfall**	:	4,700 mm
District	:	Uttar Kannada	**Temperature**	:	15 ºC to 35 ºC
Coordinates	:	15º 03' 59" N, 74° 25' 20" E	**Biogeographic Zone**	:	Western Ghats
Ownership	:	State	**Habitats**	:	Tropical Semi-evergreen Forest, Tropical Wet Evergreen Forest
Area	:	25,000 ha			

IBA CRITERIA: A1 (Threatened species); A2 (Endemic Bird Area 123: Western Ghats); A3 (Biome 10: Indian Peninsula Tropical Moist Forest)

PROTECTION STATUS: National Park, established September, 1987.

GENERAL DESCRIPTION

Anshi National Park lies in the Western Ghats, adjoining the state of Goa, to the south of Dandeli Wildlife Sanctuary. Earlier, it was part of Dandeli WLS. This step "to alter the limits and boundaries of the sanctuary was considered necessary in view of the hydroelectric project, naval base, rehabilitation of displaced persons, road, transmission lines, mining and other industries which existed in it" (quoted in Lal *et al*. 1994). The park area is less disturbed than Dandeli Wildlife Sanctuary. To the west, the park adjoins Cotigao Wildlife Sanctuary in Goa. Anshi can be reached from Bengaluru (=Bangalore) by road or rail to Dharwad (470 km), then by road to Dandeli (62 km), and on to Anshi (38 km).

Anshi NP has deep valleys, steep hills, and rich Wet Evergreen and Semi-evergreen forests. *Tectona grandis*, *Eucalyptus*, and Silver Oak *Grevillea robusta* plantations were raised in the park. Invasive species such as *Eupatorium*, *Chromolaena odorata*, *Lantana camara*, and *Parthenium* sp. are found in the park. *Eupatorium* has spread in open areas created by clear felling carried out in the past, along roads, and in the grid lines cut by the Karnataka Power Corporation.

AVIFAUNA

Not much work has been done on the avifauna of this IBA site. In a brief survey by Sanjay Sondhi, Anchal Sondhi, and Sanjay Thakur in October, 1998, 89 species were sighted. Although they sighted only one Threatened species, many restricted-range (endemic) species were seen. They also sighted two species of woodpeckers, Small Yellow-naped *Picus chlorolophus chlorigaster* and Common Golden-

backed *Dinopium javanense*, while in the adjoining Dandeli Wildlife Sanctuary, eight species were counted (Sondhi *et al*. 1998). This proves that if long-term studies are conducted in this site, many more species would be identified. This site is particularly important for many forest birds such as the Rufous-bellied Hawk-eagle *Hieraaetus kienerii*, Black Eagle *Ictinaetus malayensis*, Crested Hawk-eagle *Spizaetus cirrhatus*, Grey Junglefowl *Gallus sonneratii*, and Blue-bearded Bee-eater *Nyctyornis athertoni*. None of them are globally Threatened, but as their forest habitat is shrinking, these sightings are worth mentioning.

Rasmussen & Anderton (2005) have upgraded many subspecies to full species. One such case is the Ruby-throated Yellow Bulbul, which was earlier considered by Ali & Ripley (1987) as a subspecies of *Pycnonotus melanicterus* but is now a full species Flame-throated Bulbul *Pycnonotus gularis*, which is found at this site. Another noteworthy case is that of South Indian Black Bulbul *Hypsipetes ganeesa*, which was earlier a subspecies of *Hypsipetes madagascariensis* (Ali & Ripley 1987) or *H. leucocephalus* (Inskipp *et al*. 1996). Both these species are confined to the forests of the Western Ghats and other south Indian hills.

BirdLife International (undated) has listed 15 species under Biome 10 (Indian Peninsula Tropical Moist Forest) and 16 species under the Western Ghats Endemic Bird Area (EBA 123: Stattersfield *et al*. 1998). Based on the available information, eight Biome 10 and six EBA 123 endemic species have been found here. Once more detailed studies are conducted, more species are likely to be found.

Anshi NP was selected as an IBA based on regular sightings of the Nilgiri Wood-pigeon *Columba elphinstonii* and its vast extant habitat, and also on the basis of many restricted-range (endemic) and biome species.

OTHER KEY FAUNA

Anshi NP has all the large mammals expected in an extensive Semi-evergreen and Evergreen forest of the Western Ghats, such as the Asiatic Elephant *Elephas maximus*, Tiger *Panthera tigris*, Leopard *P. pardus*, Gaur *Bos gaurus*, Sambar *Rusa unicolor*, Spotted Deer *Axis axis*, Barking Deer *Muntiacus muntjak*, Wild Dog *Cuon alpinus*, and Sloth Bear *Melursus ursinus*. Jungle Cat *Felis chaus*, Leopard Cat *Prionailurus bengalensis*, Small Civet *Viverricula indica*, Mongoose *Herpestes edwardsi*, and Golden Jackal *Canis aureus* are the smaller predators. Wild Boar *Sus scrofa*, Mouse Deer or Indian Chevrotain *Moschiola indica*, Common Langur *Semnopithecus hector achates*, Bonnet Macaque *Macaca radiata*, Slender Loris *Loris lydekkerianus*, Malabar Giant Squirrel *Ratufa indica*, Common Giant Flying Squirrel *Petaurista petaurista*, and Porcupine *Hystrix indica* are also reported. Among reptiles, the King Cobra *Ophiophagus hannah* is an important indicator species of the prime evergreen forest of Anshi.

CRITICALLY ENDANGERED	
White-rumped Vulture	*Gyps bengalensis*
VULNERABLE	
Asian Woollyneck	*Ciconia episcopus*
Nilgiri Wood-pigeon	*Columba elphinstonii*
NEAR THREATENED	
Oriental Darter	*Anhinga melanogaster*
Lesser Fish-eagle (?)	*Ichthyophaga humilis*
Great Pied Hornbill	*Buceros bicornis*
Malabar Pied Hornbill	*Anthracoceros coronatus*
Nilgiri Flycatcher (?)	*Eumyias albicaudatus*
Tytler's Leaf-warbler	*Phylloscopus tytleri*
ENDEMIC BIRD AREA 123: WESTERN GHATS	
Nilgiri Wood-pigeon	*Columba elphinstonii*
Malabar Parakeet	*Psittacula columboides*
Malabar Grey Hornbill	*Ocyceros griseus*
White-bellied Blue Flycatcher	*Cyornis pallipes*
Small Sunbird	*Leptocoma minima*
White-bellied Treepie	*Dendrocygna leucogastra*
BIOME 10: INDIAN PENINSULA TROPICAL MOIST FOREST	
Sri Lanka Frogmouth	*Batrachostomus moniliger*
Malabar Trogon	*Harpactes fasciatus*
Malabar Pied Hornbill	*Anthracoceros coronatus*
Yellow-browed Bulbul	*Acripillas indica*
Malabar Whistling-thrush	*Myophonus horsfieldii*
Dark-fronted Babbler	*Rhopocichla atriceps*
Loten's Sunbird	*Cinnyris lotenia*
Black-throated Munia	*Lonchura kelaarti*

LAND USE

- Agriculture
- Human habitation
- Plantations

THREATS AND CONSERVATION ISSUES

- Large development projects
- Human settlements
- Electricity transmission lines
- Agriculture intensification
- Pollution
- Invasive species (weed infestation)

Anshi NP and the adjoining Dandeli WLS have many conservation problems arising out of tribal communities residing inside protected areas, the question of their displacement and rehabilitation, and ill-conceived development projects. The Kalyani Coke and Cogeneration plant and the revival of the Mahadei Diversion Project of Khanapur *taluka* in Belgaum district would seriously threaten these forests. Local environmental groups are opposing the 440 KV high tension Kaiga-Narendra powerline of the National Grid Corporation. This powerline will pass through Anshi and Dandeli, and would involve

PUTTURAJU K.

Anshi National Park has wet evergreen and semi-evergreen forest. Six endemic birds of the Western Ghats have been identified till now, but more species are likely to occur here

cutting down thousands of trees in a 520 acre area. An alternative, less harmful, route for the powerline has been suggested.

The Kaiga Atomic Power Station has caused water pollution of Kaneri river, which flows on the north side of Anshi NP. Besides, there is a problem of water scarcity in summer, since most of the waterways dry up by February. Check dams have been constructed across many streams for soil and water conservation.

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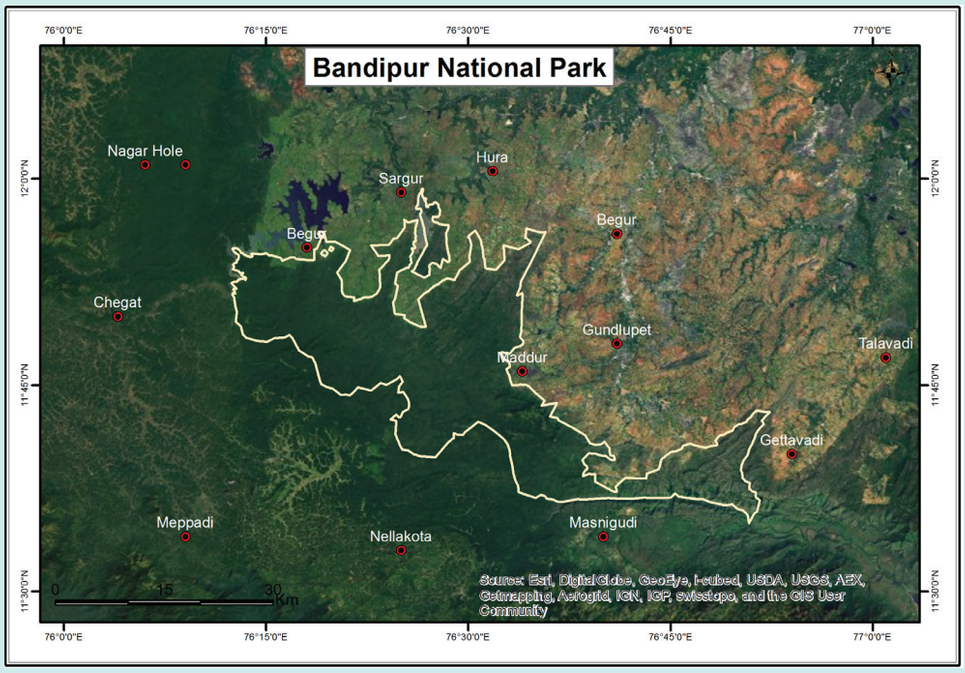
BANDIPUR NATIONAL PARK

IBA Site Code	:	IN-KA-03	**Altitude**	:	690–1,450 msl
Administrative Region (State)	:	Karnataka	**Rainfall**	:	625 mm
District	:	Mysore	**Temperature**	:	18 ºC to 30 ºC
Coordinates	:	11° 49’ 49” N, 76° 22’ 28” E	**Biogeographic Zone**	:	Western Ghats
Ownership	:	State	**Habitats**	:	Tropical Moist Deciduous Forest
Area	:	87,420 ha			

IBA CRITERIA: A1 (Threatened species), A2 (Endemic Bird Area 123: Western Ghats), A3 (Biome 10: Indian Peninsula Tropical Moist Forest, Biome 11: Indo-Malayan Tropical Dry Zone).

PROTECTION STATUS: National Park, established June, 1974.



GENERAL DESCRIPTION

Extremely rich wildlife characterizes Bandipur, one of the most famous national parks not only in Karnataka but also in the country. Contiguous to Mudumalai Wildlife Sanctuary (IBA) in Tamil Nadu to the south, to Wayanad WLS (IBA) in Kerala to the southwest, and to Nagarhole NP (IBA) to the northwest, it holds most of the representative species of southern Indian biodiversity.

This park is part of the Nilgiri Biosphere Reserve. Details about the habitats and fauna are given by Sharatchandra & Gadgil (1975), and Johnsingh (1983, 1984).

Much work on the wildlife has been done by Gadgil (1974) of the Indian Institute of Science, Bangalore. Johnsingh (1983) completed a long-term study of Wild Dog *Cuon alpinus* at the park. An ecological reconnaissance by Nair *et al*. (1977) referred to the formation of the Jawahar National Park, especially in the context of elephant habitat, and under Project Tiger.

The terrain of Bandipur is undulating, broken by chains of hills, flat-topped hillocks, and watercourses. The park is drained by the perennial Kabini, Nugu, and Moyar rivers, and by the Bavali, Moolehole, Kekkanalla, and Marandi streams. The River Moyar has cut a 260 m deep, picturesque gorge, prosaically known as the Mysore Ditch (Neginhal 1974). The soil is mainly a mixture of red laterite and black cotton soil. In some places, sandstone, semi-quartzite, and shales are present (Jain & Sastry 1983). Cultivated land borders the northern side of the National Park.

The Kabini river, across which a major irrigation dam has come up at Beechanahalli, forms the boundary between this park and Nagarhole NP.

Three main types of vegetation are observed in the park, namely Scrub in the easternmost portion, Tropical Dry Deciduous Forest in the central portion, and Tropical Moist Mixed Deciduous Forest in the western part. The Tropical Dry Deciduous Forest has a top canopy of *Anogeissus latifolia*, *Tectona grandis*, *Terminalia tomentosa*, and others (Neginhal 1974). The undergrowth comprises mainly grasses and *Lantana*. The Tropical Moist Mixed Deciduous Forest in the national park used to feature extensive stands of Bamboo *Bambusa arundinacea* and *Dendrocalamus strictus*. Top canopy species include *Tectona grandis*, *Lagerstroemia lanceolata*, *Terminalia tomentosa*, *Dalbergia latifolia*, *Pterocarpus marsupium*, *Salmalia malabarica*, *Kydia calycina*, *Adina cordifolia*, *Stereospermum xylocarpum*, *Schleichera oleosa*, and *Ficus infectoria*. Details of vegetation are given in Neginhal (1974) and Jain & Sastry (1983).

CRITICALLY ENDANGERED	
White-rumped Vulture	*Gyps bengalensis*
Long-billed Vulture	*Gyps indicus*
Red-headed Vulture	*Aegypius calvus*
ENDANGERED	
Egyptian Vulture	*Neophron percnopterus*
Black-bellied Tern	*Sterna acuticauda*
VULNERABLE	
Asian Woollyneck	*Ciconia episcopus*
Lesser Adjutant	*Leptoptilos javanicus*
Greater Spotted Eagle	*Clanga clanga*
Nilgiri Wood-pigeon	*Columba elphinstonii*
Yellow-throated Bulbul	*Pycnonotus xantholaemus*
Indian Broad-tailed Grass-warbler	*Schoenicola platyurus*
NEAR THREATENED	
Spot-billed Pelican	*Pelecanus philippensis*
Oriental Darter	*Anhinga melanogaster*
Painted Stork	*Mycteria leucocephala*
Black-headed Ibis	*Threskiornis melanocephalus*
Grey-headed Fish-eagle	*Ichthyophaga ichthyaetus*
Lesser Fish-eagle	*Ichthyophaga humilis*
Red-headed Falcon	*Falco chicquera*
Pallid Harrier	*Circus macrourus*
Great Thick-knee	*Esacus recurvirostris*
Eurasian Curlew	*Numenius arquata*
River Tern	*Sterna aurantia*
Alexandrine Parakeet	*Psittacula eupatria*
Grey-headed Bulbul	*Microtarsus priocephalus*
Malabar Pied Hornbill	*Anthracoceros coronatus*
ENDEMIC BIRD AREA 123: WESTERN GHATS	
Nilgiri Wood-pigeon	*Columba elphinstonii*
Malabar Parakeet	*Psittacula columboides*
Malabar Grey Hornbill	*Ocyceros griseus*
Grey-headed Bulbul	*Microtarsus priocephalus*
White-bellied Blue Flycatcher	*Cyornis pallipes*
Small Sunbird	*Cinnyris minima*
Indian Broad-tailed Grass-warbler	*Schoenicola platyurus*
White-bellied Treepie	*Dendrocitta leucogastra*

AVIFAUNA

Some studies on large mammals have been conducted in Bandipur, but not much work has been done on the birdlife. Even so, more than 180 bird species have been reported, including many Threatened ones. This IBA also has eight restricted-range species of the Western Ghats. As Bandipur is at the edge of Biome 11 (Indo-Malayan Tropical Dry Zone) and Biome 10 (Indian Peninsula Tropical Moist Forest), it harbours elements from both biomes. From the available literature, we could identify seven species from Biome 10 out of the 15 listed by BirdLife International (undated), and 27 from Biome 11. Most of them are common species. More are likely to be listed once detailed research is done. As Bandipur has both Tropical Moist Forest of the Western Ghats, and Tropical Dry Forest of the Deccan Peninsula, it harbours assemblages of bird species from both these biomes. Many migratory species occurring in other biomes also winter here.

Bandipur NP, along with the rest of the protected areas in Nilgiri Biosphere, forms the last remaining refuge for vultures in southern Indian hills. The vultures purely subsist on wild animal kills by carnivores or natural deaths of ungulates. The large mammal base and the formation of Tiger Reserves have greatly facilitated the survival of three species of vultures: White-rumped Vulture *Gyps bengalensis*, Long-billed Vulture *G. indicus* and Red-headed Vulture *Aegypius calvus*.

DHRITIMAN MUKHERJEE

Bandipur is famous for Gaur *Bos gaurus*, an iconic species of this national park

DHRITIMAN MUKHERJEE

Bandipur National Park is part of the Nilgiri Biosphere Reserve. Its terrain consists of undulating areas broken by chains of hills flat-topped hillocks, and watercourses

Lesser Adjutant *Leptoptilos javanicus* is present only in certain pockets in the Western Ghats and Bandipur-Nagarhole is such a pocket, hence important.

Similarly, the Nilgiri Wood-Pigeon *Columba elphinstonii*, although confined to the Western Ghats (Ali & Ripley 1987, Grimmett *et al*. 1998), is widespread and found in many IBAs. Previously unrecorded, the Lesser Fish-eagle *Ichthyophaga humilis* is now sighted often in this IBA (Praveen 2011).

OTHER KEY FAUNA

Bandipur NP is extremely rich in wildlife, due to effective protection by the Karnataka forest department. Despite selective poaching of tuskers, we still find some fine old male Asiatic Elephants *Elephas maximus* sporting large tusks.

It has a huge population of ungulates such as Cheetal *Axis axis*, Sambar *Rusa unicolor*, Barking Deer *Muntiacus muntjak*, Four-horned Antelope *Tetracerus quadricornis*, Gaur *Bos gaurus*, and Wild Boar *Sus scrofa*. This community supports a healthy population of Tiger *Panthera tigris*, Leopard *Panthera pardus*, Wild dog *Cuon alpinus*, and Hyaena *Hyaena hyaena*. Sloth Bear *Melursus ursinus* is regularly seen. Among the smaller predators, there are the Jungle Cat *Felis chaus* and the Golden Jackal *Canis aureus*. Mouse Deer or Indian Chevrotain *Moschiola indica* may not be uncommon, but is rarely seen due to its secretive nature. Reptiles include the Mugger *Crocodylus palustris* in the Nugu river, Indian Rock Python *Python molurus*, and numerous species of snakes, lizards, and turtles.

LAND USE

- Nature conservation and research
- Tourism and recreation

THREATS AND CONSERVATION ISSUES

- Livestock grazing
- Poaching
- Firewood collection
- Man-animal conflict
- Problematic invasive species: *Lantana* sp.
- Roadkills of wild animals

Bandipur NP is generally in the news due to tremendous biotic pressure, poaching, and related issues. Bandipur National Park contains the entire area of the tiger reserve and is split into core, tourism, and restoration zones. There is no human settlement inside the park, but 200 villages are situated adjacent to the park (within 5 km) with a human population of around 160,000 (1991 census). The problem of illegal collection of fuel wood and smuggling near Hangala, Channamallipur, and Bargi to Gundlupet town is a major management problem. Tobacco cultivation is practiced in 30 villages, which have 400 barns (kilns). It is estimated that about 50,000 tons of fuel wood is removed from the park every year (Jain 2001).

One national highway, Mysore-Sultan Bathery-Kozhikode, and one state highway, Gundlupet-Ooty, pass through the park, both with very heavy traffic. Roadkills of wild animals are therefore not uncommon. The spread of

ANANT ZANZALE

Red-headed Vulture *Aegypius calvus* is infrequently seen in Bandipur and the surrounding areas

disease from domestic livestock to wild ungulates (deer and gaur) is also a constant threat.

Invasive species such as *Lantana* and *Eupatorium* have covered a large part of the park, especially where livestock grazing pressure is heavy.

The presence of crop fields adjoining the forest has resulted in numerous elephant-human conflicts, which does not help in getting support from the local people.

At the same time, Bandipur NP presents great opportunities for effective management of this very important conservation site. The creation of a 190 km long barrier along the northern boundary of the park, solar powered fencing, and prompt payment of compensation could minimize the antagonism of the local people. Cattle improvement and immunization programmes would help increase the income of the locals, and save wild herbivores. Education and awareness programmes in the surrounding areas, and amongst the thousands of visitors, would support the park. Management-oriented long-term research would help in scientifically monitoring wild animal populations.

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IBA Team, J. Praveen, S. Subramanya.

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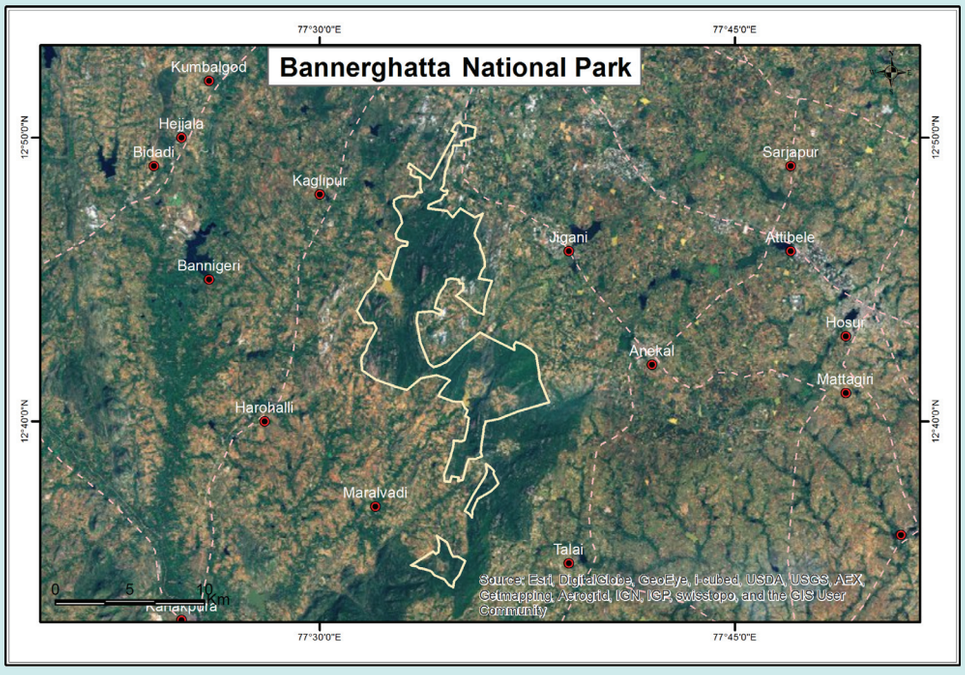
BANNERGHATTA NATIONAL PARK

IBA Site	: IN-KA-04	**Altitude**	: 740–1,034 msl
Administrative Region (State)	: Karnataka	**Rainfall**	: 700 mm
District	: Bengaluru	**Temperature**	: 20 ºC to 35 ºC
Coordinates	: 12º 46' 36" N, 77° 36' 38" E	**Biogeographic Zone**	: Deccan Peninsula
Ownership	: State	**Habitats**	: Tropical Dry Deciduous Forest
Area	: 10,277 ha		

IBA CRITERIA: A1 (Threatened species); A2 (Secondary Area s072; Southern Deccan Plateau), A3 (Biome species)

PROTECTION STATUS: National Park, established September, 1974.



GENERAL DESCRIPTION

Bannerghatta National Park, *c.* 22 km south of Bengaluru (=Bangalore) along the Bengaluru-Anekal Road, was declared a National Park in 1974, but mainly for recreation purposes. The area has mostly Dry Deciduous Forest and Scrub, with patches of Moist Deciduous Forest along the streams. Bamboo *Dendrocalamus strictus* brakes are common in the park. A small area of the park has plantations of *Eucalyptus* sp., *Bauhinia purpurea*, *Samanea saman*, and *Peltophorum pterocarpum*.

A small portion in the north of the park has been developed for tourism, with a lion and tiger safari, herbivore safari, mini zoo, reptile park, museum, and picnic spot. In 2006, a butterfly park was developed. In 2012, the Karnataka Forest Department expanded Bannerghatta NP from 10,227 ha to 26,051 ha.

AVIFAUNA

Bannerghatta NP has most of the representative birds of Biome 11 (Tropical Dry Deciduous Forest). It also has some birds of Biome 10 (Indian Peninsula Tropical Moist Forest). Among the threatened species are the Yellow-throated Bulbul *Pycnonotus xantholaemus* and two species of vultures *Gyps bengalensis* and *Gyps indicus*, which have now become extremely rare.

No detailed study on the birdlife of Bannerghatta has been conducted, but Karthikeyan (2003) lists 195 species, including the Vulnerable Nilgiri Wood-pigeon *Columba elphinstonii*. Earlier, George (1994) has also listed it from this site in his checklist of the birds of Bangalore. This forest-haunting pigeon is generally seen in the Western Ghats from Kerala in the south to just beyond Mumbai, its northern limit (Ali & Ripley 1987), but it also occurs

CRITICALLY ENDANGERED	
White-rumped Vulture (old record)	*Gyps bengalensis*
Long-billed Vulture (old record)	*Gyps indicus*
Red-headed Vulture	*Aegypius calvus*
VULNERABLE	
Greater Spotted Eagle	*Clanga clanga*
Indian Spotted Eagle	*Clanga hastata*
Nilgiri Wood-pigeon	*Columba elphinstonii*
Yellow-throated Bulbul	*Pycnonotus xantholaemus*
NEAR THREATENED	
Oriental Darter	*Anhinga melanogaster*
Spot-billed Pelican	*Pelecanus philippensis*
Painted Stork	*Mycteria leucocephala*
Black-headed Ibis	*Threskiornis melanocephala*
Pallid Harrier	*Circus macrourus*
Red-headed Falcon	*Falco chicquera*
SECONDARY AREA S072: SOUTHERN DECCAN PLATEAU	
Yellow-throated Bulbul	*Pycnonotus xantholaemus*

in outlier chains of hills, wherever suitable fruiting trees are found. For example, BirdLife International (2001) has reported it from Nandi hills in Karnataka, Shevaroy hills in Tamilnadu, and also from the North Cauvery WLS, all quite far from the main Western Ghats.

SAMAD KOTTUR

Bannerghatta National Park is an important habitat for the Yellow-throated Bulbul *Pycnonotus xantholaemus*

Birdlife International (undated) has identified 15 species in Biome 10 (Indian Peninsula Tropical Moist Forest), of which five are found at this site. Similarly, 33 out of 59 species listed in Biome 11 (Indo-Malayan Tropical Dry Zone) have been found till now. There are not many sites where so many species of the tropical dry zone occur. The presence of five species of Tropical Moist Forest, Blue-faced Malkoha *Phaenicophaeus viridirostris*, Jerdon's Nightjar *Caprimulgus atripennis*, White-cheeked Barbet *Megalaima viridis*, Yellow-browed Bulbul *Iole indica*, and Indian Scimitar-babbler *Pomatorhinus horsfieldii*) is not unexpected, as all of them have wide distribution in peninsular India and are not strictly confined to the Western Ghats. Many migratory species occurring in other biomes are found here in winter.

Earlier two *Gyps* species of vultures were reported from this area, particularly the White-rumped Vulture *Gyps bengalensis*, but there is no recent record.

This site is designated as an IBA based on the presence of a good population of Yellow-throated Bulbul and numerous biome species which are too many to list here.

OTHER KEY FAUNA

Bannergatta NP is only 10,427 ha, but it has wild Asiatic Elephant *Elephas maximus*. However, it is too small to hold elephants throughout the year. They generally come into the park in larger numbers during September-October and stay till March or so. In recent years, some elephants have been staying longer because the habitat has become more attractive (regeneration of the forest and waterholes) (R. Sukumar, *in litt.* 2003). During winter, the maximum number reaches *c.* 100 elephants, may be one fourth of this number at other times. Other large mammals still found include Gaur *Bos gaurus*, and the main predator is Leopard *Panthera pardus*. There has been no sighting of Tiger *Panthera tigris* in recent years. Sambar *Rusa unicolor*, Spotted Deer *Axis axis*, Barking Deer *Muntiacus muntjak*, Wild Boar *Sus scrofa*, and Sloth Bear *Melursus ursinus*, along with other smaller mammals, are present.

LAND USE

- Agriculture
- Plantation
- Tourism and recreation

THREATS AND CONSERVATION ISSUES

- Agriculture expansion
- Mining activities
- Poaching
- Grazing
- Human-Animal conflicts
- Establishment of Firing Range

Bannerghatta, like many other protected areas of India, is besieged with problems, all anthropogenic. Its small

Despite the fact that Bannerghatta National Park is very close to expanding city, Bengaluru, it still has many Globally Threatend species

population of 100 elephants (in the peak period) is in constant conflict with neighbouring human habitations. Irate farmers electrocute elephants by illegally tapping power from the nearby Karnataka Power Transmission Lines. Elephant-proof trenches have been laid around the 140 km periphery of the park, besides rubble walls and solar-powered fences. But these have proved to be ineffective, so there is a proposal to erect a physical barrier of iron rods. Various animal rights organizations have come together to deal with the issue and have formed a group called the Protection of Elephants and Care of the Environment (PEACE).

Illegal quarrying around the park is another problem, causing irreparable damage to the ecosystem, and adversely affecting elephants, other wildlife, and farmers. There are nearly 40 such illegal quarries. Based on petitions by local conservation NGOs, the Karnataka High Court directed the central and state governments to take action against the illegal quarrying.

Another recent problem is the acquisition of 253 acres of land by the Central Reserve Police Force (CRPF) adjoining Bannerghatta, for a firing range. The Wildlife Trust of India has petitioned the Karnataka High Court to stop the setting up of this firing range.

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S. Subramanya, J. Praveen, the IBA team.

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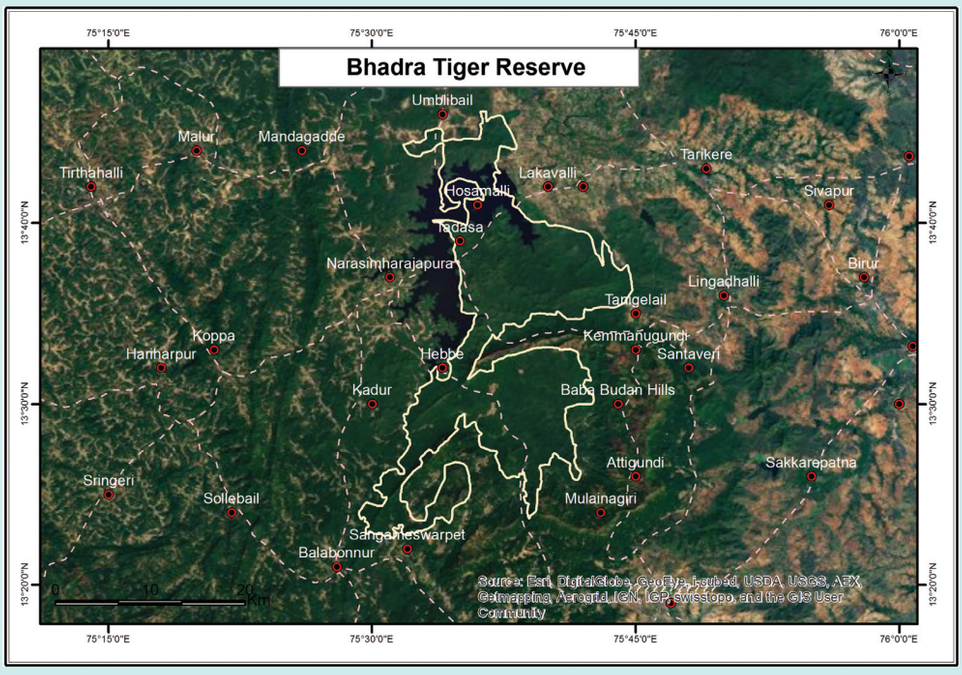
BHADRA TIGER RESERVE

IN-KA-05

IBA Site Code	: IN-KA-05	**Rainfall**	: 2,500 mm
Administrative Region (State)	: Karnataka	**Temperature**	: 10 °C to 32 °C
District	: Chikmagalur, Shimoga	**Biogeographic Zone**	: Western Ghat
Coordinates	: 13° 33' 52" N, 75° 35' 60" E	**Habitats**	: Tropical Moist Deciduous, Tropical Dry Deciduous, Tropical Secondary Scrub, Shola Forest Grassland
Ownership	: State		
Area	: 49,246 ha		
Altitude	: 750–2,100 msl		

IBA CRITERIA: A1 (Threatened species), A2 (Endemic Bird Area 123: Western Ghats)

PROTECTION STATUS: Wildlife Sanctuary, declared 1974. Upgraded as Tiger Reserve, September, 1998.



GENERAL DESCRIPTION

Bhadra Tiger Reserve is situated in the Malnad region of Karnataka, *c.* 50 km east of the Western Ghats (Karanth 1982) in Chikmagalur and Shimoga districts. An imposing outspur of the Western Ghats called Bababudan or Bababudangiri hill range rises abruptly from the Deccan Plateau, forming a rough crescent. Inside the 'crater' formed by the range, the terrain is gently undulating (670–760 m), but the hills reach up to 1,200–1,500 m. One of these peaks, Mullaiahna Giri (1,900 m), is the highest in Karnataka (Karanth 1982). Inside the 'crater,' another chain of hills called Kagemane Giri (= crow's house mountain, in Kannada) further divide the valley. The tiger reserve essentially comprises the Muthodi area in the crescent and Lakkavalli area spread on the northern outer slopes of the Bababudans (Karanth 1982). It must be mentioned here that there is an overlap between Kemmangundi and Bhadra Tiger Reserve. Most of the sholas around Kemmangundi are now part of Bhadra Tiger Reserve.

Ali & Whistler (1942) have described it very well, "The Bababudans is the highest range in Karnataka. It is in the form of a crescent or horse-shoe with opening to the north-west. Its character is that of a stupendous ridge ca 6,000 ft. in elevation, in parts only a few yards wide along the summit, and rising at intervals into lofty peaks. The higher portions consist of steep grassy slopes cut up by well-wooded ravines or sholas through which flow perennial streams. The sides are densely clothed with forest among which are numerous coffee plantations. The Jagar Valley which occupies the centre of this horseshoe with an elevation of about 2,000 ft. is one stretch of forest (Evergreen biotope: chiefly moist-inter zone) as far as the eye can see. North-east of this is

Bababudangiri (6214 ft.) on which are the sources of the Veda and Avati rivers."

The Bhadra river and its tributaries, namely Somavahini, Thadabehalla, and Odirayanahalla, drain the reserve. A dam has been constructed across the Bhadra river near Lakkavalli, forming a vast *c.* 200 sq. km reservoir whose backwaters extend nearly 13 km inwards, till the foot of the hill ranges (Karanth 1982). In addition to these major water sources, there are numerous seasonal and perennial streams.

A part of the reserve covering an area of 20,059 ha was declared as the Jagara Valley WLS by the Government of Mysore in 1951. After a systematic survey and census of the entire area for animals, birds, and plants, it was decided to increase the area under the Jagara Valley Sanctuary. The adjacent area reconstituted in 1974 as Bhadra WLS covering 49,246 ha, as per Section 18 of the Indian Wildlife (Protection) Act, 1972, was brought under Project Tiger in 1998 (Jain 2001).

The forests of the valley floor and northern outer slopes are of wet deciduous type. The inner slopes are covered by *shola*s (Southern Montane Wet Temperate Forest) interrupted by grassy downs (Southern Montane Wet Grassland). On the outer edges of Lakkavalli area, the forests tend to intergrade into Dry Deciduous type. On the whole, Muthodi area is wetter and more verdant than Lakkavalli (Karanth 1982).

More than 120 species of trees have been identified in the Reserve. The important trees of the site include *Tectona grandis*, *Terminalia tomentosa*, *T. paniculata*, *Pterocarpus marsupium*, *Ficus* sp., *Dillenia* sp., and *Lagerstroemia lanceolata*. Bamboos *Dendrocalamus strictus* and *Bambusa arundinacea* form the under-canopy (Karanth 1982). Where the canopy is closed, the forest floor is carpeted with wild Ginger *Globba* sp. and where it is more open, the weed *Eupatorium* has spread. Low-lying areas of the valley floor are often marshy glades (locally called *hadlu*s), clothed with luxuriant growth of grasses.

AVIFAUNA

Bhadra Tiger Reserve is extremely rich in flora and fauna, but unfortunately no detailed work on birds has been done there. Based on short birdwatching surveys and visits, more than 100 species of birds have been identified from this IBA (Anand Prasad, *in litt.* 2003), including the threatened Nilgiri Wood-pigeon *Columba elphinstonii*. Even now, there is no published checklist.

Of the 26 Western Ghats endemics, nine are found in Bhadra. Similarly, of the 15 Biome 10 (Indian Peninsula Tropical Moist Forest) species identified by BirdLife International (undated), 12 have been seen in Bhadra, making it a very important bird area of India.

In the shallow backwaters of the Bhadra Reservoir,

CRITICALLY ENDANGERED	
White-rumped Vulture	*Gyps bengalensis*
Long-billed Vulture	*Gyps indicus*
ENDANGERED	
Nilgiri Blue Robin	*Myiomela major*
VULNERABLE	
Lesser Adjutant	*Leptoptilos javanicus*
Nilgiri Wood-pigeon	*Columba elphinstonii*
Indian Broad-tailed Grass-warbler	*Schoenicola platyurus*
NEAR THREATENED	
Oriental Darter	*Anhinga melanogaster*
Great Pied Hornbill	*Buceros bicornis*
Malabar Pied Hornbill	*Anthracoceros coronatus*
Nilgiri Flycatcher	*Eumyias albicaudatus*
Grey-headed Bulbul	*Microtarsus priocephalus*
ENDEMIC BIRD AREA 123: WESTERN GHATS	
Nilgiri Wood-pigeon	*Columba elphinstonii*
Malabar Parakeet	*Psittacula columboides*
Malabar Grey Hornbill	*Ocyceros griseus*
Grey-headed Bulbul	*Microtarsus priocephalus*
Indian Rufous Babbler	*Turdoides subrufus*
Nilgiri Blue Robin	*Myiomela major*
White-bellied Blue Flycatcher	*Cyornis pallipes*
Small Sunbird	*Leptocoma minima*
Indian Broad-tailed Grass-warbler	*Schoenicola platyurus*
White-bellied Treepie	*Dendrocitta leucogastra*
BIOME 10: INDIAN PENINSULA TROPICAL MOIST FOREST	
Jerdon's Nightjar	*Caprimulgus atripennis*
Malabar Trogon	*Harpactes fasciatus*
Malabar Pied Hornbill	*Anthracoceros coronatus*
White-cheeked Barbet	*Megalaima viridis*
Yellow-browed Bulbul	*Acritillas indica*
Malabar Whistling-thrush	*Myophonus horsfieldii*
Indian Scimitar-babbler	*Pomatorhinus horsfieldii*
Dark-fronted Babbler	*Rhopocichla atriceps*
Loten's Sunbird	*Cinnyris lotenia*
Black-throated Munia	*Lonchura kelaarti*

Near Threatened species such as Oriental Darter *Anhinga melanogaster* and the Vulnerable Lesser Adjutant *Leptoptilos javanicus* can be seen, along with more common birds such as cormorants, egrets, herons, ducks, and kingfishers. Sriram *et al.* (2008) were the first to report the sighting of White-bellied Sea-eagle *Haliaeetus leucogaster* from Lakkavalli Dam along the northern edge of Bhadra Tiger Reserve on March 26, 2006. Then Sadvi (2009) sighted White-bellied Sea-eagle 15 times in Bhadra TR from February 28, 2007 to December 12, 2008, with a maximum of four birds sighted on the very first occasion. Praveen (2009) also mentions that Sachin Shurpali reported a single White-bellied Sea-eagle from the inland area of Bhadra Reservoir in July 2008. Both Lesser and Greater Fish-eagles *Ichthyophaga humilis* and *I. ichthyaetus* are found here.

The Nilgiri Blue Robin *Myiomela major*, earlier known as Rufous-bellied Shortwing, has been reported from Bababudan Hills (Robin *et al.* 2006). Bababudan Hills are

part of Bhadra WLS. Another interesting endemic species is Nilgiri Pipit *Anthus nilghiriensis* that has been reported from the grasslands, but this need confirmation.

Although we have listed two species of *Gyps* vultures, they are only historically recorded here. There has been no confirmed recent record during the last 10 years.

OTHER KEY FAUNA

Bhadra was established mainly for the protection of large mammals such as the Asiatic Elephant *Elephas maximus*, Tiger *Panthera tigris*, Leopard *P. pardus*, and Gaur *Bos gaurus*. According to Karanth (1982), Gaur is the pride of Bhadra. Ecological suitability of the habitat, coupled with the isolation of this area, and freedom from outbreaks of rinderpest disease (which decimated Gaur populations in many sanctuaries in 1968), seems to be the cause of their relative abundance.

Other mammals with fair populations are Spotted Deer *Axis axis*, Sambar *Rusa unicolor*, Barking Deer or Indian Muntjac *Muntiacus muntjak*, Mouse Deer *Moschiola indica*, Indian Giant Squirrel *Ratufa indica*, and Large Brown Flying Squirrel *Petaurista petaurista*. Wild Dog *Cuon alpinus* is found all over the park (Karanth 1982). Wild Boar *Sus scrofa* and Sloth Bear *Melursus ursinus* are known. Otter *Lutra* sp. is reported from Bhadra Reservoir (Karanth 1982). Bhadra lies in the known distribution range of the elusive Rusty-spotted Cat *Prionailurus rubiginosus*.

Reptiles such as Marsh Crocodile *Crocodylus palustris*, Indian Monitor Lizard *Varanus bengalensis*, Indian Rock Python *Python molurus*, King Cobra *Ophiophagus hannah*, Russell's Viper *Daboia russelii*, and Bamboo Pit Viper *Trimeresurus gramineus* occur in the IBA.

LAND USE

- Nature conservation and research
- Tourism

THREATS AND CONSERVATION ISSUES

- Livestock grazing
- Firewood collection
- Disturbance to birds
- Poaching
- Mining
- Pollution of rivers

Bhadra Tiger Reserve is large enough (492 sq. km), but a closer look would give a true picture. The expansive 200 sq. km Bhadra Irrigation Project occupies a large area of the reserve. The remaining 292 sq. km, the actual land area, is divided into three parts. While the main body of Lakkavalli-Muthodi region is separated from Aldera state forest in the north by the Bhadra dam, private coffee estates surround the Bababudangiri state forest to the east. So the largest single unit of land, the Lakkavalli-Muthodi region, is only about 250 sq. km, just over half the entire area of the

DHRITIMAN MUKHERJEE

A dam has been constructed across the Bhadra river near Lakkavalli, forming a vast *c.* 200 sq. km reservoir whose backwaters extend nearly 13 km inwards, lapping the foot of the hills

DHRITIMAN MUKHERJEE

Despite being located about 50 km east of the Western Ghats (called Bababudan Hills), Bhadra Tiger Reserve has all the biological elements of the Western Ghats, including many endemic species

reserve. Furthermore, these different forest areas are not free from human interference. About 16 villages are yet to be relocated from the Lakkavalli-Muthodi forests. A road passes through Bababudangiri state forest in the east, which, apart from tourists, is also used by vehicles of the Viswesvarayya Mining and Steel Company, which is mining the adjacent forests. There is an active stone quarry across the boundary of the reserve, to the north, along the Bhadravathi-Bhadra River Project road. The forest of the area is not free from disturbances and is highly prone to degradation (Ameen Ahmed, *pers. comm*. 2003).

The site is the natural habitat of highly prized timber species such as Teak and Rosewood. Besides, extensive teak plantations have been raised in the past (1903–1978) throughout the reserve. Timber smuggling is common in Lakkavalli and Thanigebyle Ranges. The smugglers use carts and bullocks to drag teak logs away. Poaching is more frequent in places nearer the coffee estates. Around 36,000 people live in 26 surrounding villages, and *c.* 750 families in the core area (Ameen Ahmed, *pers. comm*. 2003).

Vijakumar *et al*. (2014) conducted amphibian surveys in the Western Ghats and found a new species of bush-frog of genus *Raorchestes*, family Rhacophoridae, from the Bababudan hill range. They named it *Raorchestes echinatus*, based on its dorsal spinular projection.

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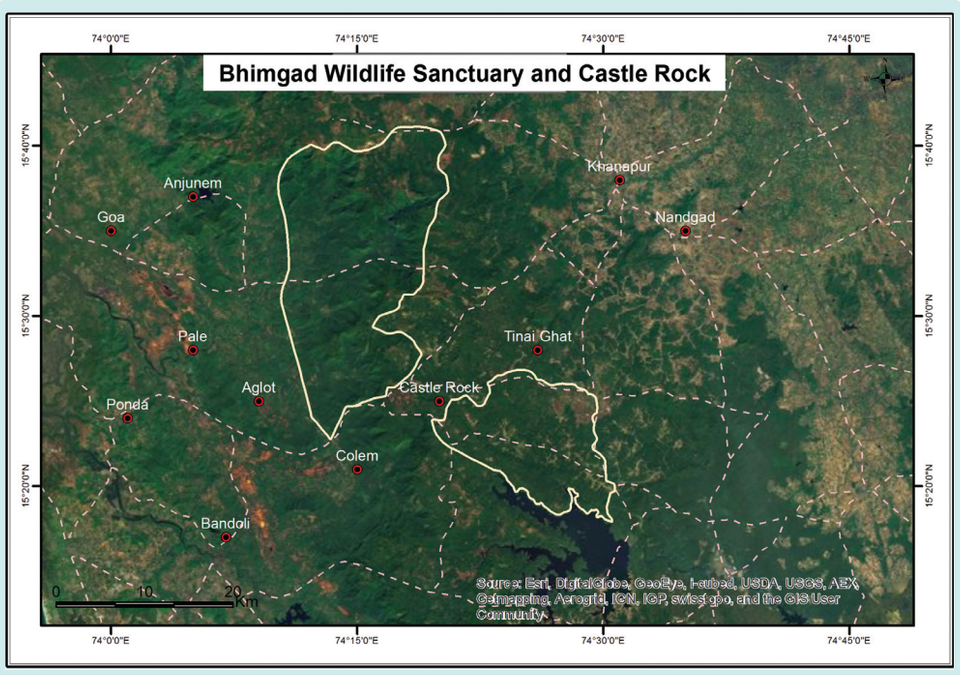
BHIMGAD WILDLIFE SANCTUARY AND CASTLE ROCK

IN-KA-06

IBA Site Code	: IN-KA-06	**Altitude**	: 60–810 msl
State	: Karnataka	**Rainfall**	: 2,500 mm
District	: Belgaum, Uttara Kannada	**Temperature**	: 10 °C to 32 °C
Coordinates	: 15° 32' 34" N, 74° 18' 26" E	**Biogeographic Zone**	: Western Ghats
Ownership	: State	**Habitats**	: Lowland Evergreen Rainforest, Tropical Moist Deciduous Forest
Area	: WLS 7,000 ha, Castle Rock 5,820 ha		

IBA CRITERIA: A1 (Threatened species), A2 (Endemic Bird Area 123: Western Ghats), A3 (Biome 10: Indian Peninsula Tropical Moist Forest)

PROTECTION STATUS: Wildlife Sanctuary, declared December 01, 2011.



GENERAL DESCRIPTION

Bhimgad Wildlife Sanctuary lies in the districts of Belgaum and Uttar Kannada (North Kanara) in Karnataka. This region is part of the central Western Ghats, forming a large corridor as it is surrounded on all sides by sanctuaries and national parks, except to the east. The site is an excellent representative of Wet Evergreen Rain Forest and is home to diverse flora and fauna. Amidst these forests lie the ruins of Bhimgad fort, which is of historical importance. To give a single recognizable name to this unprotected forest area, the region is called Bhimgad forest.

Bhimgad forest is part of one of the largest contiguous forest ranges in the Western Ghats. To the southeast lies Dandeli WLS and to the south lies Anshi NP (both in Karnataka). The western border extends to Goa and is formed by Cotigao WLS, Netravali WLS, Bhagwan Mahavir WLS, and Mollem NP, which are contiguous with the rich evergreen forests extending up to Radhanagari WLS through the Amboli Reserve Forest areas in Maharashtra.

Castle Rock is a small village on the Miraj-Londa railway line. The site spreads over 5,820 ha of forested land around Castle Rock railway station and village. It is under the jurisdiction of the Karnataka Forest Department. A railway line passes through the site, connecting Londha (Karnataka) with Collem (Goa) stations. There is a tar road within the site, which connects Castle Rock village with National Highway 4A and nearby villages. Castle Rock has a population of 1,500. Apart from this village, there are 11 small settlements with a total population of *c.* 5,000. There are isolated agricultural patches in the forest.

Blessed with good rainfall, Bhimgad and Castle Rock are covered with Wet Evergreen, Semi-evergreen Moist Tropical, and Moist Deciduous Forest, interspersed with grasslands, some degraded forest, and cultivation. The

vegetation, which has been described by Thakar *et al.* (1964) and Vartak (1966), changes from Moist Deciduous to Semi-evergreen at higher elevations. Still higher, around the crest lines, there are isolated patches of typical Tropical Evergreen Forest. These forests contain some endemic species such as *Diospyros nigrescens*, *Connarus ritchiei*, *Jasminum malabaricum*, *Memecylon talbotianum*, and *Myristica malabarica*.

The mountain range and valleys are crisscrossed with perennial streams, providing drinking water to millions of people. The Mahadayi river originates here and flows into Goa as the Mandovi, a major source of fresh water for the state.

AVIFAUNA

Preliminary observations revealed 184 bird species (Tejal V., *pers. comm.* 2003). As Bhimgad and Castle Rock are considered as one IBA site, the following description is valid for both.

The site falls in Biome 10, which is typified by the species of Indian Peninsula Tropical Moist Forest, but species of Biome 11, i.e. Indo-Malayan Tropical Dry Zone, are also reported here. Stattersfield *et al.* (1998) have listed 16 restricted-range or endemic species in the Western Ghats. Based on the new taxonomy, 26 endemic species are likely to be found in the Western Ghats (Rasmussen & Anderton 2012, del Hoyo & Collar 2014). Of these, eight are found in Bhimgad and Castle Rock forest range. Many more are likely to be present.

BirdLife International (undated) identified 15 species which occur in the Western Ghats and isolated areas of moist forests in the Eastern Ghats and elsewhere in peninsular India, which are called Biome 10 (Indian Peninsula Tropical Moist Forest). Interestingly, 10 out of these 15 Biome 10 species have been seen in this site. Long-term studies would reveal more species, as the habitat is suitable for many species of this biome.

CRITICALLY ENDANGERED	
White-rumped Vulture (historical)	*Gyps bengalensis*
Long-billed Vulture	*Gyps indicus*
NEAR THREATENED	
Lesser Fish-eagle	*Ichthyophaga humilis*
Pallid Harrier	*Circus macrourus*
Great Pied Hornbill	*Buceros bicornis*
Malabar Pied Hornbill	*Anthracoceros coronatus*
Grey-headed Bulbul	*Microtarsus priocephalus*
ENDEMIC BIRD AREA 123: WESTERN GHATS	
Grey-fronted Green-pigeon	*Treron affinis*
Malabar Parakeet	*Psittacula columboides*
Malabar Grey Hornbill	*Ocyceros griseus*
Malabar Barbet	*Megalaima malabarica*
Grey-headed Bulbul	*Microtarsus priocephalus*
Wynaad Laughingthrush	*Dryonastes delesserti*
Indian Rufous Babbler	*Turdoides subrufus*
White-bellied Blue Flycatcher	*Cyornis pallipes*
Small Sunbird	*Leptocoma minima*
White-bellied Treepie	*Dendrocitta leucogastra*
BIOME 10: INDIAN PENINSULA TROPICAL MOIST FOREST	
Sri Lanka Frogmouth	*Batrachostomus monileger*
Malabar Trogon	*Harpactes fasciatus*
Malabar Pied Hornbill	*Anthracoceros coronatus*
Yellow-browed Bulbul	*Acritillas indica*
Malabar Whistling-thrush	*Myophonus horsfieldii*
Indian Scimitar-babbler	*Pomatorhinus horsfieldii*
Dark-fronted Babbler	*Rhopocichla atriceps*
Loten's Sunbird	*Cinnyris lotenia*
Black-throated Munia	*Lonchura kelaarti*

BANDANA AUL

Bhimgad Wildlife Sanctuary, with the adjoining protected areas of Goa, forms a contiguous habitat for the birds of the Western Ghats

This site also has two Critically Endangered species of vultures and five Near Threatened species, as categorized by BirdLife International (2014). Rasmussen & Anderton (2005, 2012) have upgraded many subspecies to species level. One such example is the Pompadour Green Pigeon *Treron pompadora*. Ali & Ripley (1987) identified five subspecies of *T. pompadora*, including one found in the Western Ghats, Grey-fronted Green-pigeon *T. pompadora affinis*. This has now become a full species, *Treron affinis*. It is not uncommon in forests and well-wooded country in evergreen and wet deciduous biotopes, lowlands, and up to about 1,200 m altitude. The presence of this species in Bhimgad and Castle Rock (and other IBAs of the Western Ghats) is worth noting. Two *Gyps* species of vultures, that were fairly common nearly 20 years ago, have now almost disappeared.

OTHER KEY FAUNA

Bhimgad Forest (Castle Rock range) is covered with dense forest and harbours almost all the representative large vertebrates of the Western Ghats, except for the Asiatic Elephant *Elephas maximus*. There are reports of Tiger *Panthera tigris* and Leopard *P. pardus*. Sloth Bear *Melursus ursinus*, Mouse Deer or Indian Chevrotain *Moschiola indica*, and Slender Loris *Loris lydekkerianus* are other interesting species of this IBA site. Perhaps the most important, for which Bhimgad is famous among bat specialists, is the colony of Wroughton's Free-tailed Bat *Otomops wroughtoni*, an Endangered species classified as Data Deficient by IUCN, till recently known to occur only in one cave in Barapede, half a kilometre from Talewadi in Belgaum (Bates & Harrison 1997). Less than 50 individuals are known to be present, making it one of the rarest mammals in the world.

The presence of King Cobra *Ophiophagus hannah* further proves the importance of Bhimgad as a relatively unspoiled tropical moist forest. There are some interesting arboreal reptiles, such as the Gliding Snake (Golden Tree Snake) *Chrysopelea ornata* and the Gliding Lizard *Draco dussumieri*.

LAND USE

- Agriculture
- Nature conservation and research
- Tourism and recreation
- Mining

THREATS AND CONSERVATION ISSUES

- Industrialization
- Construction of roads, reservoirs, and dams
- Felling of trees
- Poaching
- Habitat alteration
- Mining

The biggest conservation issue is the status of Bhimgad as a protected area. In 1975, when Dandeli WLS was established, Bhimgad Forest was part of this sprawling 572,900 ha protected area. However, in 1987, Dandeli WLS was reduced to 83,400 ha, and the forests of Bhimgad were denotified. This was apparently done to allow mining. In 1999, the Forest Department of Karnataka again proposed to re-notify *c.* 55,000 ha as Bhimgad Wildlife Sanctuary, which was finally declared on December 01, 2011. As it does not have sanctuary status, anthropogenic pressures are immense, with timber smuggling, shifting cultivation, forest fires, livestock grazing, poaching, building of roads, dams, and mining going on. Unsustainable logging is resulting in structural disturbances and considerable change of floristic composition, which is converting the original vegetation to secondary forest cover.

All these unsustainable anthropogenic activities, which are destroying these forests, have to be checked immediately, and developmental activities should be curtailed so that the major source of fresh water for three states is maintained.

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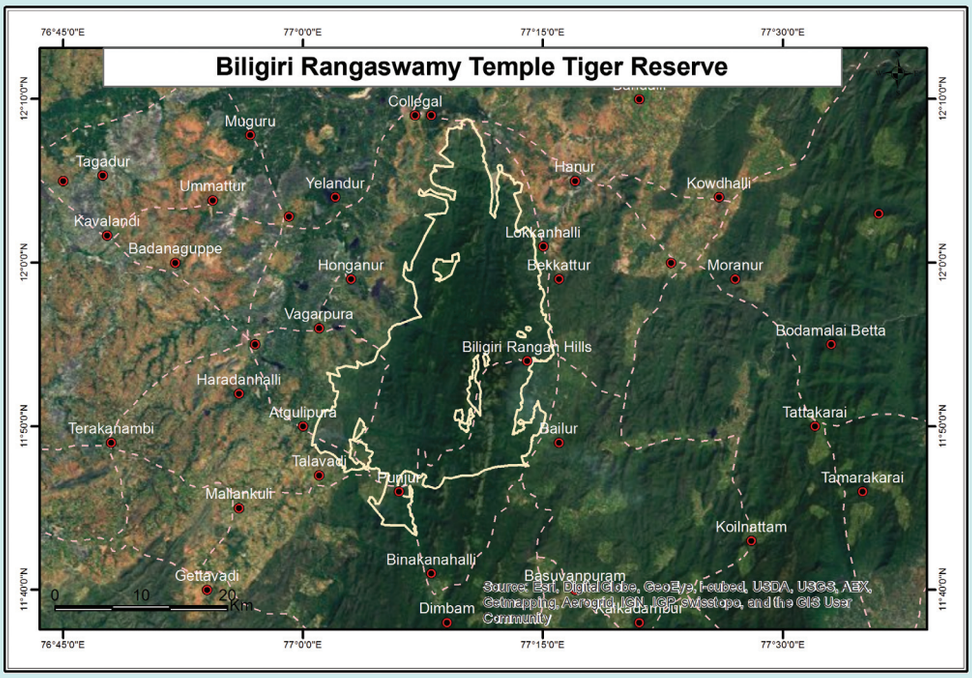
BILIGIRI RANGASWAMY TEMPLE TIGER RESERVE

IBA Site	: IN-KA-07	**Altitude**	: 600–1,800 msl
State	: Karnataka	**Rainfall**	: 600–3,000 mm
District	: Chamarajanagar	**Temperature**	: 10 °C to 30 °C
Coordinates	: 11° 50' 01" N, 77° 05' 08" E	**Biogeographic Zone**	: Western Ghats
Ownership	: State	**Habitats**	: Tropical Moist Deciduous Forest, Tropical Dry Deciduous Forest
Area	: 53,952 ha		

IBA CRITERIA: A1 (Threatened species); A2 (Secondary Area s072: Southern Deccan Plateau); A3 (Biome 10: Indian Peninsula Tropical Moist Forest)

PROTECTION STATUS: Wildlife Sanctuary since 1987, Tiger Reserve established January, 2011.



GENERAL DESCRIPTION

Biligiri Rangaswamy Temple Tiger Reserve includes several hills (also called BR Hills) which represent the easternmost extension of the main Western Ghats. The hills were earlier a wildlife sanctuary (since 1987) until the recent notification as a tiger reserve. This unique extension constitutes a live bridge between the Eastern Ghats and Western Ghats, with the Biligiri Rangaswamy Temple Tiger Reserve located near the middle of this bridge (Ganeshaiah & Uma Shankar 1998). Thus, the biota of this reserve is expected to be similar to that of the Western Ghats, with a significant proportion of Eastern Ghats elements as well.

The IBA is named after *Biligiri* (= white cliff in Kannada) on which the temple of Lord Rangaswamy is located.

The reserve is the only large patch of forest remaining outside the main Western Ghats. The entire spectrum of macrohabitats is represented within the 54,000 ha area of the reserve. Major vegetation was recorded by Ramesh (1989). Moist Deciduous and Dry Deciduous Forests comprise *c.* 61%, Scrub 28%, and Grassland *c.* 3.4%. Higher elevation areas are characterized by Evergreen Forest 6.5%, and high altitude *shola*s 0.8% (Ramesh 1989).

AVIFAUNA

Biligiri Rangaswamy Temple Tiger Reserve is very rich in birds: 281 species have been reported from this IBA (Srinivasan *et al.* 1997, Srinivasan & Prasanth 2006), including 12 globally Threatened and Near Threatened species. It also has six restricted-range species of Endemic Bird Area 123 as described by Stattersfield *et al.* (1988).

The Biligiri Rangaswamy Temple Tiger Reserve connects the Eastern Ghats and Western Ghats with avifaunal

elements derived from both these areas (Aravind *et al*. 2001). However, have shown a noticeable absence of Great Pied Hornbill *Buceros bicornis*, Malabar Pied Hornbill *Anthracoceros coronatus* and Malabar Grey Hornbill *Ocyceros griseus*, and two woodpecker species of the Western Ghats, despite its habitat continuity with the Western Ghats (Ramesh 1989). It should be noted that the majority of Western Ghats wet zone bird species are found in this IBA (Srinivasan & Prashanth 2006).

As a fairly detailed birdlist of this site is available, we know that many biome-restricted species are seen here, especially those of Biome 10 (Indian Peninsula Tropical Moist Forest) and Biome 11 (Indo-Malayan Tropical Dry Zone). Thirteen out of 15 Biome 10, and 34 out of 59 Biome 11 species have been located till now. This proves that the habitat is still in good shape. Near Threatened species are also seen here, but this site may not be very important for their conservation, as two of them (Painted Stork *Mycteria leucocephala* and Black-headed Ibis *Threskiornis melanocephalus*) are wetland birds. Red-headed Vulture *Aegypius calvus* is one of the Critically Endangered species also found in this IBA. Srinivasan & Prasanth (2005) reported the Near Threatened Grey-headed Bulbul *Microtarsus priocephalus* thrice from the same place in this tiger reserve, twice in 2003 and once in 2004. It was seen at two other locations during the census in 2012 (S. Subramanya, *pers. comm*. 2014).

Another bird of conservation concern is the Yellow-throated Bulbul *Pycnonotus xantholaemus* (Karthikeyan *et al*. 1995), found in rocky outcrops or boulder-studded hill areas with open scrub and dry deciduous forest.

All species of vultures have become very rare. N.S. Prasanth recently recorded a vagrant Long-billed Vulture *Gyps indicus* here.

CRITICALLY ENDANGERED	
White-rumped Vulture (old record)	*Gyps bengalensis*
Long-billed Vulture	*Gyps indicus*
Red-headed Vulture	*Aegypius calvus*
ENDANGERED	
Egyptian Vulture	*Neophron percnopterus*
VULNERABLE	
Asian Woollyneck	*Ciconia episcopus*
Nilgiri Wood-pigeon	*Columba elphinstonii*
Yellow-throated Bulbul	*Pycnonotus xantholaemus*
NEAR THREATENED	
Painted Stork	*Mycteria leucocephala*
Black-headed Ibis	*Threskiornis melanocephalus*
Grey-headed Fish-eagle	*Ichthyophaga ichthyaetus*
Red-headed Falcon	*Falco chicquera*
Grey-headed Bulbul	*Microtarsus priocephalus*
ENDEMIC BIRD AREA 123: WESTERN GHATS	
Nilgiri Wood-pigeon	*Columba elphinstonii*
Malabar Parakeet	*Psittacula columboides*
Grey-headed Bulbul	*Microtarsus priocephalus*
Indian Rufous Babbler	*Turdoides subrufus*
Black-and-Orange Flycatcher	*Ficedula nigrorufa*
Small Sunbird	*Leptocoma minima*
SECONDARY AREA S072: SOUTHERN DECCAN PLATEAU	
Yellow-throated Bulbul	*Pycnonotus xantholaemus*
BIOME 10: INDIAN PENINSULA TROPICAL MOIST FOREST	
Blue-faced Malkoha	*Phaenicophaeus viridirostris*
Indian Swiftlet	*Collocalia unicolor*
White-cheeked Barbet	*Megalaima viridis*
Malabar Barbet	*Psilopogon malabaricus*
Yellow-browed Bulbul	*Acritillas indica*
Malabar Whistling-thrush	*Myophonus horsfieldii*
Indian Scimitar-babbler	*Pomatorhinus horsfieldii*
Dark-fronted Babbler	*Rhopocichla atriceps*
Loten's Sunbird	*Cinnyris lotenia*
Black-throated Munia	*Lonchura kelaarti*

OTHER KEY FAUNA

Biligri Rangaswamy TR is rich in large mammals such as Asiatic Elephant *Elephas maximus*, Tiger *Panthera tigris*, Leopard *P. pardus*, Gaur *Bos gaurus*, Sambar *Rusa unicolor*, Spotted Deer *Axis axis*, and Four-horned Antelope *Tetracerus quadricornis*. Nearly 35 species of mammals have been identified. Kumara *et al*. (2014) conducted a survey of small carnivores in Biligiri Rangaswamy Tiger Reserve from October, 2009 to December, 2011, during which they recorded nine species of small carnivores, namely Jungle Cat *Felis chaus*, Leopard Cat *Prionailurus bengalensis*, Rusty-spotted Cat *P. rubiginosus* (Vulnerable), Small Indian Civet *Viverricula indica*, Asian Palm Civet *Paradoxurus hermaphroditus*, Stripe-necked Mongoose *Herpestes vitticollis*, Common Mongoose *Herpestes edwardsi*, Ruddy Mongoose *Herpestes smithii*, and Smooth-coated Otter *Lutrogale perspicillata* (Vulnerable). It is the only protected area in Karnataka to report the Madras Tree Shrew *Anathana ellioti* (Srinivasan *et al*. 2009). The hills are also rich in butterflies – 150 species are identified (Aravind *et al*. 2001).

LAND USE

- Nature conservation and research

THREATS AND CONSERVATION ISSUES

- Unregulated tourism
- Firewood collection
- Poaching
- Man-Animal conflicts

The reserve is inhabited by indigenous people called Soligas (Aravind *et al*. 2001). The Soligas were hunter-gatherers who used to practice shifting cultivation, but now live a settled life. They collect non-timber forest produce, an important source of income for the tribe.

BR Hills is an important hill-forest habitat of southern Karnataka, well known for its Asiatic Elephant population, medicinal plant diversity, the Soliga tribals, and the ancient

DHRITIMAN MUKHERJEE

More than 280 bird species have been reported from Biligiri Rangaswamy Tiger Reserve. This is an important area as it connects the Western Ghats to the Eastern Ghats, resulting in elements derived from both these regions

temple itself. Several tribal hamlets have been located in these forests for generations, and their rights over the land have now been granted under the Forest Rights Act. The impact of collection of non-timber forest produce by the Soligas has been studied through participatory resource monitoring by local NGOs Ashoka Trust for Research in Ecology and Environment (ATREE), and Vivekananda Girijana Kalyana Kendra (VGKK). The Vivekananda Girijana Kalyan Kendra has been working with the Soliga tribals for more than 30 years. Apart from health, education, and marketing of tribal produce, VGKK is also helping with employment and skills-building among the tribals.

Accidental as well as intentional electrocution of elephants is a big problem. Encroachment of traditional migratory corridors and degradation of the habitat force the elephants to raid crop fields, resulting in occasional backlash by farmers.

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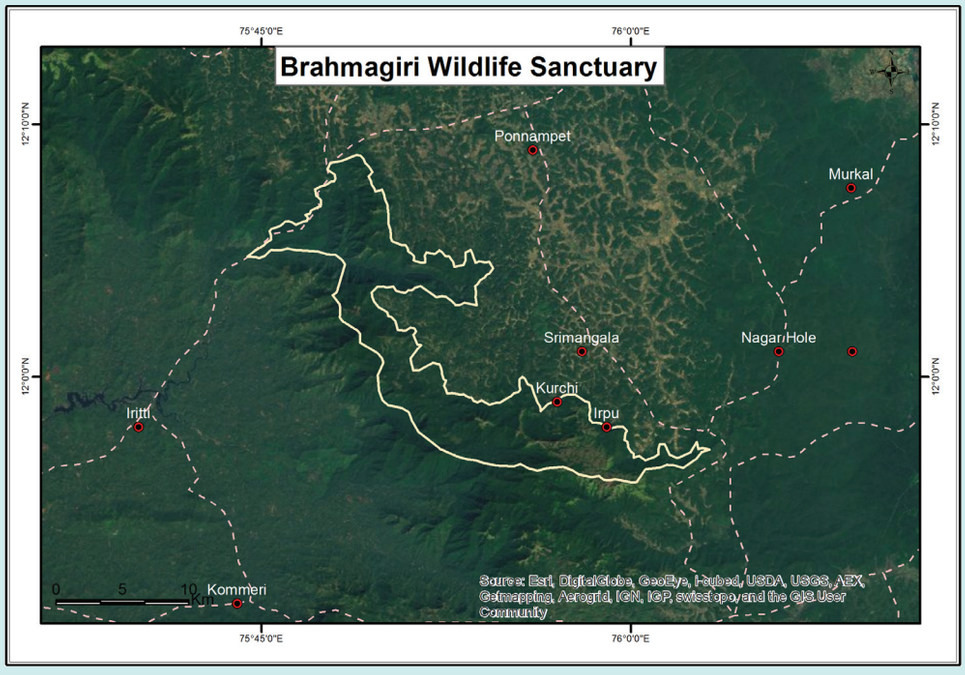
BRAHMAGIRI WILDLIFE SANCTUARY

IN-KA-08

IBA Site	: IN-KA-08	**Rainfall**	: 2,500–6,000 mm
Administrative Region (State)	: Karnataka	**Temperature**	: 5 ºC to 32 ºC
District	: Kodagu	**Biogeographic Zone**	: Deccan Peninsula
Coordinates	: 12º 16' 30" N, 75° 45' 12" E	**Habitats**	: Wet Evergreen, Tropical Semi-evergreen, and Montane Wet Temperate Forests, Montane Grassy Slopes
Ownership	: State		
Area	: 18,129 ha		
Altitude	: 65–1,607 msl		

IBA CRITERIA: A1 (Threatened species); A2 (Endemic Bird Area 123: Western Ghats), A3 (Bione 10: Indian Peninsula Tropical Moist Forest)

PROTECTION STATUS: Wildlife Sanctuary, established June, 1974.



GENERAL DESCRIPTION

Brahmagiri Wildlife Sanctuary, located on the Karnataka-Kerala border, adjoins Aralam WLS in Kerala. It is separated from Nagarhole National Park by a narrow strip of coffee estates, and from the Pushpagiri WLS by a thick evergreen forest corridor and coffee estates. It forms the catchment area of the Lakshmanathirtha river, a tributary of the Cauvery.

On the lower altitudes and slopes, evergreen forests dominate, while on the higher hills, montane sholas and grasslands are found.

AVIFAUNA

Thejaswi Shivanand (*pers. comm.* 2002) identified at least 135 species from the sanctuary. The Threatened White-bellied Shortwing, now termed Nilgiri Blue Robin *Myiomela major*, was recorded from this sanctuary earlier (BirdLife International 2001). Two specimens were collected in April 1881, one in February 1883, and one male in April 1896 (BirdLife International 2001). Recently, Vijayan (2002) conducted a survey of this species in Karnataka and Goa. He could not locate the Nilgiri Blue Robin in Brahmagiri, but it is likely to be found here as the habitat is still suitable. The sanctuary is known for supporting a very healthy population of the Broad-tailed Grassbird *Schoenicola platyurus* with a population of over 20 singing males per sq. km during the breeding season (S. Subramanya, *pers. comm.* 2014).

Stattersfield *et al.* (1998) identified 16 endemic or restricted-range species in the Western Ghats Endemic Bird Area (EBA 123). Based on the new

classification (Rasmussen & Anderton 2012, del Hoyo & Collar 2014), 26 endemic species of birds are now found in the Western Ghats. At this site, 12 of them are found, which proves that the natural forest is largely intact. Some of them, e.g., Malabar Parakeet *Psittacula columboides* and Small Sunbird *Nectarinia minima*, are quite common.

The Nilgiri Wood-pigeon *Columba elphinstonii* is considered Vulnerable by BirdLife International (2001) owing to its small, declining population, as a result of the widespread destruction of its forest habitat. More than a hundred years ago, it was comparatively common in the Brahmagiris in Coorg (Davison 1883), but subsequently Betts (1951) did not record it. As Davison has mentioned, this pigeon "moves about a good deal, and a shola that may be full of them one week, will not contain a single specimen the following week; this is due … to the prevalence or otherwise of berries".

This site lies in Biome 10 (Indian Peninsula Tropical Moist Forest: BirdLife International, undated). Fifteen species are listed in this biome, of which 12 have been reported from here (S. Thejaswi, *pers. comm*. 2003). This further shows the importance of Brahmagiri WLS as an excellent habitat for birds of the Western Ghats EBA. Nine species listed in Biome 11 (Indo-Malayan Tropical Dry Zone) are also found at this site, but they all are widespread and some are fairly common.

OTHER KEY FAUNA

Four species of primates are present in the sanctuary: Common Langur *Semnopithecus entellus*, Nilgiri Langur *Trachypithecus johni*, Lion-tailed Macaque *Macaca silenus*, and Bonnet Macaque *Macaca radiata*. Groves (2001) upgraded different subspecies of *Semnopithecus* to full species status. According to this classification, the site harbours the Vulnerable Black-footed Grey Langur *S. hypoleucos*, perhaps the most threatened primate in India.

Among the predators, Tiger *Panthera tigris*, Leopard *P. pardus*, Wild Dog *Cuon alpinus*, and Jungle Cat *Felis chaus* are common. Sloth Bear *Melursus ursinus* and Wild Boar *Sus scrofa* are also present. Herbivores include the Asiatic Elephant *Elephas maximus*, Mouse Deer *Moschiola indica*, Indian Muntjac *Muntiacus muntjak*, Cheetal or Spotted Deer *Axis axis*, Sambar *Rusa unicolor*, and Gaur *Bos gaurus*. Reptiles include the Draco or Gliding Lizard *Draco dussumieri*, King Cobra *Ophiophagus hannah*, and Bamboo Pit Viper *Trimeresurus gramineus*. *Ansonia (= Ghatophryne) ornata*, an Endangered amphibian endemic to the Western Ghats, has been recorded from the Brahmagiri hills.

LAND USE

- Nature conservation and research
- Forestry
- Tourism, trekking

DHRITIMAN MUKHERJEE

Brahmagiri Wildlife Sanctuary, along with Aralam WLS in Kerala and Nagarhole National Park and adjoining Reserve Forest, forms a large contiguous habitat for many endemic and globally Threatened species

DHRITIMAN MUKHERJEE

Brahmagiri forms the catchment area of the Lakshmanathirtha river, a tributary of the Cauvery

CRITICALLY ENDANGERED	
Red-headed Vulture	*Aegypius calvus*
ENDANGERED	
Nilgiri Blue Robin	*Myiomela major*
VULNERABLE	
Nilgiri Wood-pigeon	*Columba elphinstonii*
Indian Broad-tailed Grass-warbler	*Schoenicola platyurus*
NEAR THREATENED	
Malabar Pied Hornbill	*Anthracoceros coronatus*
Pallid Harrier	*Circus macrourus*
Grey-headed Bulbul	*Microtarsus priocephalus*
Banasura Laughingthrush	*Strophocincla jerdoni*
Black-and-Orange Flycatcher	*Ficedula nigrorufa*
Nilgiri Flycatcher	*Eumyias albicaudatus*
ENDEMIC BIRD AREA 123: WESTERN GHATS	
Malabar Parakeet	*Psittacula columboides*
Malabar Grey Hornbill	*Ocyceros griseus*
Grey-headed Bulbul	*Microtarsus priocephalus*
Nilgiri Blue Robin	*Myiomela major*
Wynaad Laughingthrush	*Dryonastes delesserti*
Banasura Laughingthrush	*Strophocincla jerdoni*
Indian Rufous Babbler	*Turdoides subrufus*
Black-and-Orange Flycatcher	*Ficedula nigrorufa*
Nilgiri Flycatcher	*Eumyias albicaudatus*
White-bellied Blue Flycatcher	*Cyornis pallipes*
Small Sunbird	*Leptocoma minima*
White-bellied Treepie	*Dendrocitta leucogastra*

BIOME 10: INDIAN PENINSULA TROPICAL MOIST FOREST	
Sri Lanka Frogmouth	*Batrachostomus moniliger*
Jerdon's Nightjar	*Caprimulgus atripennis*
Indian Swiftlet	*Collocalia unicolor*
Malabar Trogon	*Harpactes fasciatus*
Malabar Pied Hornbill	*Anthracoceros coronatus*
Malabar Barbet	*Psilopogon malabaricus*
Crimson-throated Barbet	*Megalaima rubricapilla*
Yellow-browed Bulbul	*Acritillas indica*
Malabar Whistling-thrush	*Myophonus horsfieldii*
Indian Scimitar-babbler	*Pomatorhinus horsfieldii*
Dark-fronted Babbler	*Rhopocichla atriceps*
Black-throated Munia	*Lonchura kelaarti*

THREATS AND CONSERVATION ISSUES

- Poaching
- Encroachments by coffee estates
- Livestock grazing
- Firewood collection
- Hydroelectric project
- Invasive weeds in the shola grasslands

A hydroelectric project is proposed to be set up near the Iruppu Falls within the sanctuary limits. A poor quality Environmental Impact Assessment (EIA) report was submitted to the government for clearance of this project. This EIA report includes the Fox *Vulpes bengalensis* and Nilgai *Boselaphus tragocamelus* (purely north and central

PUTTURAJA K.

Malabar Grey Hornbill, an endemic species to the Western Ghats in India is one of the ten hornbill species found in India

Indian species) among the animals found in the area! Moreover, the report writes off the biodiversity value of the evergreen forests as negligible. Before this project is sanctioned, good quality and unbiased EIA is required to minimize the damage to the habitat, and, if necessary, to cancel the hydroelectric project altogether.

Rampant growth of invasive weeds namely *Eupatorium* sp. and bracken ferns *Pteris* spp. have overtaken the grasslands at the top. Vast stretches of tall dense patches of *Eupatorium* have entirely changed the nature and character of the grassland. The Forest Department should immediately take steps to remove/curtail these invasive species.

KEY CONTRIBUTORS

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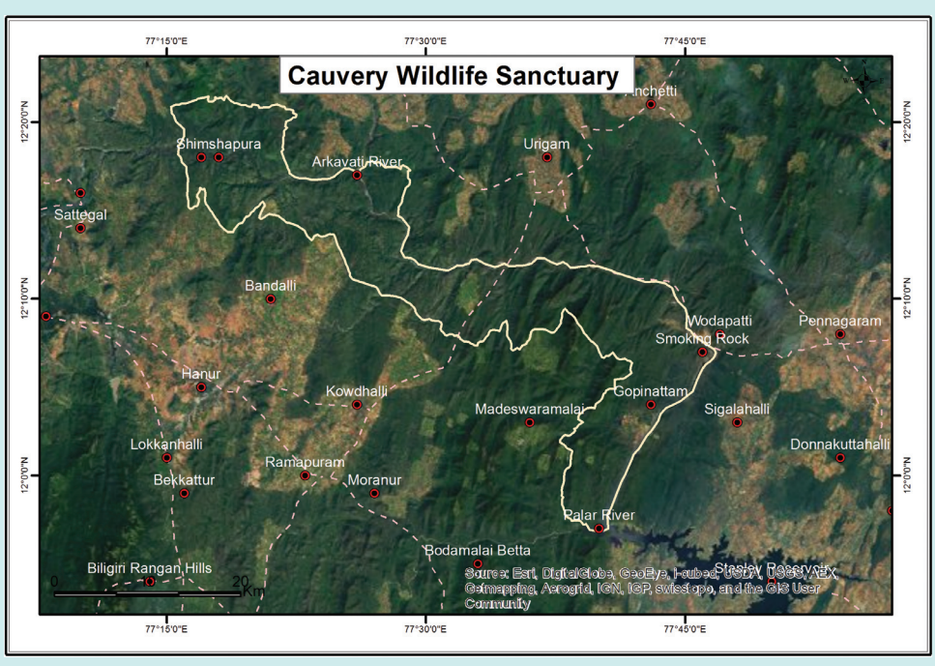
CAUVERY WILDLIFE SANCTUARY

IN-KA-09

IBA Site	: IN-KA-09	**Area**	: 1027 sq. km
Administrative Region (State)	: Karnataka	**Altitude**	: 125–1,514 msl
District	: Chamarajanagar, Ramanagar, Mandya	**Rainfall**	: 830 mm
Coordinates	: 12º 18' 41" N, 77° 27' 14" E	**Temperature**	: 20 ºC to 37 ºC
Ownership	: State	**Biogeographic Zone**	: Deccan Peninsula
		Habitats	: Tropical Moist Deciduous, Forests, Riverine Vegetation

IBA CRITERIA: A1 (Threatened species); A2 (Endemic Bird Area 123: Western Ghats; Secondary Area s072: Southern Deccan Plateau), A3 (Biome 10: Indian Peninsula Tropical Moist Forest)

PROTECTION STATUS: Wildlife Sanctuary, established January, 1987.



GENERAL DESCRIPTION

Cauvery Wildlife Sanctuary forms an important part of the drier forests of Karnataka spread in Chamarajanagar, Ramanagar, and Mandya districts. It is part of the Mysore Elephant Reserve declared by Project Elephant. As the name indicates, this sanctuary is situated on the banks of the River Cauvery, which flows through the major part of this protected area. The River Cauvery demarcates the northern and eastern boundaries of the sanctuary. To the east and northeast, the sanctuary is bordered by Tamil Nadu state. Deciduous and riverine forests cover much of the area, especially the eastern parts. The sanctuary is famous for the Endangered fish Deccan Mahseer *Tor khudree*. Recently, an additional area of about 500 sq. km was added to Cauvery WLS from adjacent forest divisions, making it one of the important large contiguous wildlife habitats.

The sanctuary has riverine and dry deciduous forests, and some patches of scrub forest. Along the river, trees such as *Terminalia arjuna* and *Syzygium cumini* dominate the vegetation. *Tamarindus indica*, *Hardwickia binata*, *Acacia amara*, *Feronia* sp., *Ficus* sp., and *Acacia* sp. represent the vegetation in the rest of the sanctuary. The northwestern part has been cleared, but good forests survive in other areas (Lal *et al*. 1994).

AVIFAUNA

The avifauna is typical of semi-arid areas. Besides the two Critically Endangered *Gyps* species of vultures, which have a wide distribution and are not confined to this IBA or habitat alone, this IBA has five Vulnerable and six Near Threatened bird species. An extensive bird survey carried out during January, 2014 has put the list of birds at 235

DHRITIMAN MUKHERJEE

The rich forest of Cauvery Wildlife Sanctuary forms the catchment area of the Cauvery river

species and the updated checklist puts the total number of species at 266.

The sighting of Nilgiri Wood-pigeon *Columba elphinstonii*, a Vulnerable species (BirdLife International 2001), in Cauvery is interesting. This bird occurs in Moist Evergreen Forests in the Western Ghats complex, but moves about a lot in search of fruiting trees. Therefore, it sometimes visits the Cauvery forests. It seems to be much more widespread than thought earlier.

Black-bellied Tern *Sterna acuticauda* is definitely found in this IBA and probably breeds on small islands in the Cauvery river (J. Praveen, *pers. comm*. 2014).

Although this site lies in the drier zone of Karnataka, it also has some patches of forest where species of tropical moist forest are seen. BirdLife International (undated) have listed 15 species that represent Biome 10 (Indian Peninsula Tropical Moist Forest). Even with no detailed studies on its birdlife, nine out of these15 species have been seen in this site, and more are likely to be recorded. In Biome 11 (Indo-Malayan Tropical Dry Zone), BirdLife International (undated) has listed 59 species. Most of them are common, but nevertheless important representatives of their biome. In Cauvery, 29 species have been recorded belonging to this biome, including the Critically Endangered Red-headed Vulture *Aegypius calvus*, which is rarely seen now in this IBA.

Lott (1987a, b, c) identified 127 species in and around Kaveri Valley. Thejaswi & Shivaprakash (2004) have shown that the Cauvery basin, covering *c.* 81,15,500 ha, is an important wintering area for the Vulnerable Greater Spotted Eagle *Clanga clanga*. They recorded the species on 29 sites, including two riverine areas.

Lethaby (2005) mentions that in December, 2003, Lesser Fish-eagle *Ichthyophaga humilis*, a Near Threatened species, was sighted for the first time on Galibore on Cauvery river. Praveen (2011) reports six sightings of Lesser Fish-eagle from Cauvery WLS during 2003–2009. Breeding of Lesser Fish-eagle has been recorded mainly in the Himalayan foothills, but Ramarao *et al.* (2011) reported a nest from Cauvery WLS on June 07, 2009. BirdLife International (2014) classifies Lesser Fish-eagle as Near Threatened, as it depends on forest-fringed waterbodies with good stocks of fish. It is thought to be undergoing "a moderately rapid and ongoing population decline" owing to forest degradation, overfishing, and perhaps especially, pollution, and may already be reduced to a small population.

Alexandrine Parakeet *Psittacula eupatria*, listed as Near Threatened, is a species of north, northeast, and central India, with feral populations in south India, possibly from escapee birds. It is seen in Cauvery WLS. Incidentally, it is also resident in Sri Lanka (Rasmussen & Anderton 2012).

CRITICALLY ENDANGERED	
White-rumped Vulture (old record)	*Gyps bengalensis*
Long-billed Vulture (old record)	*Gyps indicus*
Red-headed Vulture (old record)	*Aegypius calvus*
ENDANGERED	
Black-bellied Tern	*Sterna acuticauda*
VULNERABLE	
Indian Spotted-eagle	*Clanga hastata*
Greater Spotted-eagle	*Clanga clanga*
Nilgiri Wood-pigeon	*Columba elphinstonii*
Yellow-throated Bulbul	*Pycnonotus xantholaemus*
Pied Tit	*Parus nuchalis*
NEAR THREATENED	
Oriental Darter	*Anhinga melanogaster*
Painted Stork	*Mycteria leucocephala*
Black-headed Ibis	*Threskiornis melanocephalus*
Lesser Fish-eagle	*Ichthyophaga humilis*
Great Thick-knee	*Esacus recurvirostris*
Alexandrine Parakeet	*Psittacula eupatria*
ENDEMIC BIRD AREA 123: WESTERN GHATS	
Nilgiri Wood-pigeon	*Columba elphinstonii*
Malabar Parakeet	*Psittacula columboides*
White-bellied Blue Flycatcher	*Cyornis pallipes*
SECONDARY AREA S.072: SOUTHERN DECCAN PLATEAU	
Yellow-throated Bulbul	*Pycnonotus xantholaemus*
BIOME 10: INDIAN PENINSULA TROPICAL MOIST FOREST	
Blue-faced Malkoha	*Phaenicophaeus viridirostris*
Jerdon's Nightjar	*Caprimulgus atripennis*
Indian Swiftlet	*Collocalia unicolor*
White-cheeked Barbet	*Megalaima viridis*
Loten's Sunbird	*Cinnyris lotenia*
Black-throated Munia	*Lonchura kelaarti*
BIOME 11: INDO-MALAYAN TROPICAL DRY ZONE	
Red-headed Vulture	*Aegypius calvus*
Rain Quail	*Coturnix coromandelica*
Jungle Bush-quail	*Perdicula asiatica*
Painted Bush-quail	*Perdicula erythrorhyncha*
Painted Spurfowl	*Galloperdix lunulata*
Indian Peafowl	*Pavo cristatus*
Yellow-wattled Lapwing	*Vanellus malabaricus*
Yellow-legged Green-pigeon	*Treron phoenicoptera*
Plum-headed Parakeet	*Psittacula cyanocephala*
Mottled Wood-owl	*Strix ocellata*
Common Indian Nightjar	*Caprimulgus asiaticus*
Indian Grey Hornbill	*Ocyceros birostris*
Yellow-fronted Pied Woodpecker	*Dendrocopos mahrattensis*
Black-rumped Flameback	*Dinopium benghalense*
White-naped Flameback	*Chrysocolaptes festivus*
Ashy-crowned Sparrow-lark	*Eremopterix grisea*
Black-headed Cuckooshrike	*Coracina melanoptera*
Small Minivet	*Pericrocotus cinnamomeus*
Common Woodshrike	*Tephrodornis pondicerianus*
White-browed Bulbul	*Pycnonotus luteolus*
Indian Robin	*Saxicoloides fulicatus*
Large Grey Babbler	*Turdoides malcolmi*
Jungle Babbler	*Turdoides striata*
White-browed Fantail	*Rhipidura aureola*
Brahminy Starling	*Sturnus pagodarum*
White-bellied Drongo	*Dicrurus caerulescens*
Ashy Woodswallow	*Artamus fuscus*

OTHER KEY FAUNA

This IBA has a long list of mammals such as Leopard *Panthera pardus*, Tiger *P. tigris*, Asiatic Elephant *Elephas maximus*, Wild Boar *Sus scrofa*, Sambar *Rusa unicolor*, Spotted Deer *Axis axis*, Barking Deer or Indian Muntjac *Muntiacus muntjak*, Four-horned Antelope *Tetracerus quadricornis*, Malabar Giant Squirrel *Ratufa indica maxima*, Grizzled Giant Squirrel *Ratufa macroura dandolena*, Common Otter *Lutra lutra*, and Black-naped Hare *Lepus nigricollis*. It is possibly one of the last refuges of the Grizzled Giant Squirrel in Karnataka (Manjrekar 2000). Other species reported are Mouse Deer *Tragulus meminna*, Sloth Bear *Melurus ursinus*, Indian Crested Porcupine *Hystrix indica*, Black-footed Grey Langur *Semnopithecus hypoleucos*, Wild Dog *Cuon alpinus*, Jungle Cat *Felis chaus*, Golden Jackal *Canis aureus*, Small Indian Civet *Viverricula indica*, Striped Hyaena *Hyaena hyaena*, and Common Mongoose *Herpestes edwardsi*.

Reptiles include Marsh Crocodile *Crocodylus palustris*, Rock Python *Python molurus*, Cobra *Naja naja*, Russell's Viper *Daboia russelii*, Vine Snake *Ahaetulla nasutus*, Banded Krait *Bungarus fasciatus*, Common Krait *Bungarus caeruleus*, Wolf Snake *Lycodon aulicus*, Green Keelback *Macropisthodon plumbicolor*, Rat Snake *Ptyas mucosus*, Indian Mud Turtle *Lissemys punctata*, and Indian Monitor Lizard *Varanus bengalensis*. Among fish, this sanctuary is known for the presence of Mahseer *Tor khudree*.

LAND USE

- Tourism and recreation

THREATS AND CONSERVATION ISSUES

- Disturbance by tourists
- Fuel wood collection by villagers
- Cattle grazing/browsing.

The Kanipanpura Elephant Corridor connects high elephant density areas such as Nagarhole NP-Bandipur NP-Wayanad WLS-Mudumalai WLS complex in the Western Ghats with areas in the Eastern Ghats, such as Sathyamangalam and Kollegal Reserve Forests and the Biligiri Rangaswamy Temple Sanctuary to Cauvery WLS. However, this corridor is disturbed by the Pykara Hydroelectric Project.

As the sanctuary lies on the border of Karnataka and Tamil Nadu, poaching is a big problem due to lack of coordination among the forest staff of the two states.

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IBA Team, S. Subramanya

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RISHAD NAOROJI

The Lesser Fish-eagle *Ichthyophaga humilis* was sighted for the first time in December, 2003 on Galibore on the Cauvery river. Subsequently, there have been many sightings from this area

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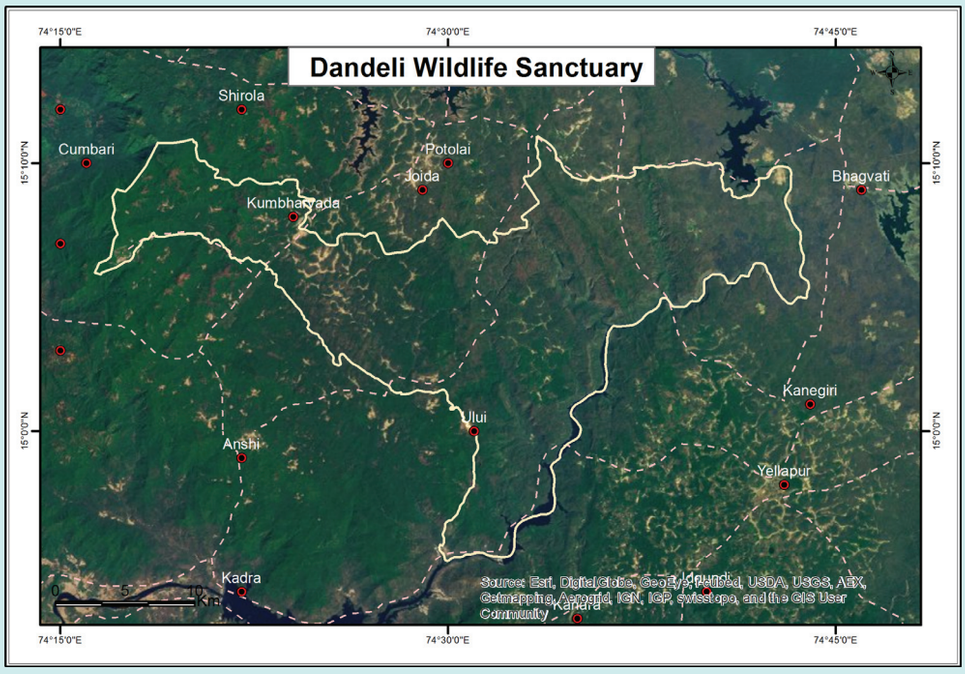
DANDELI WILDLIFE SANCTUARY

IN-KA-10

IBA Site Code	: IN-KA-10	**Altitude**	: 100–970 msl
Administrative Region (State)	: Karnataka	**Rainfall**	: 2,500 mm
District	: Uttara Kannada	**Temperature**	: 10 ºC to 36 ºC
Coordinates	: 15° 13' 27" N, 74° 37' 36" E	**Biogeographic Zone**	: Western Ghats
Ownership	: State	**Habitats**	: Tropical Moist Deciduous Forest, Tropical Semi-evergreen Forest
Area	: 84,316 ha		

IBA CRITERIA: A1 (Threatened species), A2 (Endemic Bird Area 123: Western Ghats), A3 (Biome 10: Indian Peninsula Tropical Moist Forest, Biome 11: Indo-Malayan Tropical Dry Zone)

PROTECTION STATUS: Wildlife Sanctuary, established September, 1987. Now part of Anshi-Dandeli Tiger Reserve, declared January, 2007.



GENERAL DESCRIPTION

At one time, Dandeli was one of the largest sanctuaries in Asia, with an area of 572,900 ha. However, in 1987, it was reduced to 83,400 ha. The area was drastically reduced, ostensibly to make it "more manageable", but actually to allocate areas for industry, mining, and other purposes. At the same time, an area of 25,000 ha in the southern part of the sanctuary was constituted as Anshi National Park (an IBA) and 13,000 ha was declared as Bhimgad Wildlife Sanctuary in 2011. Bhagwan Mahavir Sanctuary (an IBA) in Goa adjoins the western border of Dandeli WLS.

Many rivers pass through these forests, the most important being the Kali. The sanctuary has a great diversity of habitats, due to which it has a rich diversity of wildlife, especially avifauna.

This IBA has forests ranging from Moist Deciduous to Semi-evergreen, spread over undulating terrain. Teak plantations of various age-class exist in the sanctuary. The area is also rich in bamboo, and herbs and climbers of medicinal value.

AVIFAUNA

Dandeli Sanctuary harbours more than 285 species of birds (Jathar 1998). David Stanton (*in litt.* 2003) has recently listed 185 species, including some restricted-range and Near Threatened ones. Based on three visits to a small portion of this sprawling sanctuary, Karthikeyan *et al.* (1993) have listed 155 species.

Dandeli is the catchment of the Kali river. The river starts above Dudhsagar Falls in Goa and flows east for *c.* 40

km and then west; it joins the Arabian Sea in Karwar. For its greater part, the river flows through evergreen forest where Malabar Pied Hornbill *Anthracoceros coronatus*, Grey-headed Fish-eagle *Ichthyophaga ichthyaetus*, and Oriental Darter *Anhinga melanogaster*, all Near Threatened species, can be seen (David Stanton, *in litt.* 2003). The river is dammed in many places for hydroelectric purposes, creating reservoirs that attract hundreds of Little, Indian, and Great Cormorants (*Phalacrocorax* spp.), River Tern *Sterna aurantia*, and Black-headed Ibis *Threskiornis melanocephalus*, the latter two being Near Threatened. Lesser Adjutant *Leptoptilos javanicus*, a Vulnerable species, was sighted twice from Dandeli in 2001 and 2007 (Praveen 2008). Praveen & Kuriakose (2006) reported a sighting of the Near Threatened Black-and-Orange Flycatcher *Ficedula nigrorufa* from Ganeshgudi near Dandeli.

Despite the reduction in size and many development activities, some parts of Dandeli still retain good primary evergreen and semi-evergreen forest, where three species of hornbills, Malabar Pied, Malabar Grey *Ocyceros griseus*, and Great Pied *Buceros bicornis*, are not uncommon. It is not unusual to see up to 30 Malabar Pied Hornbill flying to their roost in the evening (David Stanton, *in litt.* 2003).

CRITICALLY ENDANGERED	
White-rumped Vulture	*Gyps bengalensis*
ENDANGERED	
Egyptian Vulture	*Neophron percnopterus*
VULNERABLE	
Asian Woollyneck	*Ciconia episcopus*
Lesser Adjutant	*Leptoptilos javanicus*
Nilgiri Wood-pigeon	*Columba elphinstonii*
NEAR THREATENED	
Oriental Darter	*Anhinga melanogaster*
Black-headed Ibis	*Threskiornis melanocephalus*
Grey-headed Fish-eagle	*Ichthyophaga ichthyaetus*
Lesser Fish-eagle	*Ichthyophaga humilis*
River Tern	*Sterna aurantia*
Malabar Pied Hornbill	*Anthracoceros coronatus*
Great Pied Hornbill	*Buceros bicornis*
Black-and-Orange Flycatcher	*Ficedula nigrorufa*
ENDEMIC BIRD AREA 123: WESTERN GHATS	
Nilgiri Wood-pigeon	*Columba elphinstonii*
Grey-fronted Green-pigeon	*Treron affinis*
Malabar Parakeet	*Psittacula columboides*
Malabar Grey Hornbill	*Ocyceros griseus*
Indian Rufous Babbler	*Turdoides subrufus*
Small Sunbird	*Leptocoma minima*

DHRITIMAN MUKHERJEE

Dandeli Wildlife Sanctuary, along with Anshi National Park, Bhimgad Wildlife Sanctuary, and Bhagwan Mahavir Wildlife Sanctuary (all IBAs) constitute an extensive habitat for globally Threatened and endemic birds of the Western Ghats

BIOME 10: INDIAN PENINSULA TROPICAL MOIST FOREST	
Blue-faced Malkoha	*Phaenicophaeus viridirostris*
Jerdon's Nightjar	*Caprimulgus atripennis*
White-cheeked Barbet	*Megalaima viridis*
Malabar Barbet	*Psilopogon malabarica*
Yellow-browed Bulbul	*Iole indica*
Malabar Whistling-thrush	*Myophonus horsfieldii*
Indian Scimitar-babbler	*Pomatorhinus horsfieldii*
Dark-fronted Babbler	*Rhopocichla atriceps*
Loten's Sunbird	*Cynnyris lotenia*
BIOME 11: INDO-MALAYAN TROPICAL DRY ZONE	
Yellow-wattled Lapwing	*Vanellus malabaricus*
Yellow-footed Green-pigeon	*Treron phoenicoptera*
Plum-headed Parakeet	*Psittacula cyanocephala*
Sirkeer Malkoha	*Phaenicophaeus leschenaultii*
Indian Grey Hornbill	*Ocyceros birostris*
Yellow-fronted Pied Woodpecker	*Dendrocopos mahrattensis*
Black-headed Cuckooshrike	*Coracina melanoptera*
Small Minivet	*Pericrocotus cinnamomeus*
Common Woodshrike	*Tephrodornis pondicerianus*
White-browed Bulbul	*Pycnonotus luteolus*
Indian Robin	*Saxicoloides fulicata*
Tawny-bellied Babbler	*Dumetia hyperythra*
Large Grey Babbler	*Turdoides malcolmi*
White-headed Babbler	*Turdoides affinis*
Jungle Prinia	*Prinia sylvatica*
Ashy Prinia	*Prinia socialis*
White-browed Fantail	*Rhipidura aureola*
White-bellied Drongo	*Dicrurus caerulescens*
Ashy Woodswallow	*Artamus fuscus*

Vijayakumar & Davidar (2008) reported social play or play fighting behaviour of Malabar Pied Hornbill from Dandeli along the Kali river.

The Mountain Imperial-pigeon *Dacula badia*, and Grey-fronted Green-pigeon *Treron affinis* are not uncommon in undisturbed thick forests. Rasmussen & Anderton (2012) have upgraded the Western Ghats subspecies of Pompadour Green Pigeon *Treron pompadora affinis* to full species status and named it *T. affinis*. It must now be considered as endemic to the Western Ghats complex and Sri Lanka.

The forest habitat of Dandeli is ideal for species of Biome 10 (Indian Peninsula Tropical Moist Forest). BirdLife International (undated) has listed 15 species of the Western Ghats and isolated areas of moist forest in the Eastern Ghats and elsewhere in peninsular India. Eight out of these 15 species have been reported at Dandeli (Girish Jathar, *pers. comm.* 2003), but more are likely to be found.

Although Dandeli lies in Biome 10, 20 species of Biome 11 (Indo-Malayan Tropical Dry Zone) are also seen, most of them quite common and widespread, and hence not of much conservation concern. Many Biome 11 species have adapted to man-modified habitats, and some species have changed their distribution so much that they occur in other biomes also.

This site has been selected as an IBA based on the globally Threatened, restricted-range, and biome-restricted species found here, some in significant numbers.

OTHER KEY FAUNA

Large mammals found in Dandeli are Tiger *Panthera tigris*, Leopard *P. pardus*, Sloth Bear *Melursus ursinus*, Asiatic Elephant *Elephas maximus*, Gaur *Bos gaurus*, and Wild Boar *Sus scrofa*. Other mammals include Wild Dog *Cuon alpinus*, Indian Giant Squirrel *Ratufa indica maxima*, Common Giant Flying Squirrel *Petaurista petaurista*, Bonnet Macaque *Macaca radiata*, South-western Langur *Semnopithecus hypoleucos*, Slender Loris *Loris tardigradus*, Mongoose *Herpestes edwardsi*, Sambar *Rusa unicolor*, Cheetal *Axis axis*, Barking Deer *Muntiacus muntjak*, and Mouse Deer *Moschiola indica*. Wroughton's Free-tailed Bat *Otomops wroughtoni* was found in June, 2002 by Anand Pendharkar (*pers. comm.* 2004) in the Kawala Caves, with a minimum estimate of 500 individuals.

The sanctuary also harbours various reptiles, including Gliding Lizard *Draco dussumieri*, Indian Coral Snake *Calliophis* sp., Bamboo Pit Viper *Trimeresurus gramineus*, Common Wolf Snake *Lycodon aulicus*, Ornate Flying Snake or Gliding Snake *Chrysopelea ornata*, King Cobra *Ophiophagus hannah*, and Marsh Crocodile *Crocodylus palustris* (Mehta & Kulkarni 2014).

LAND USE

- Forestry (monoculture)
- Tourism and recreation
- Mining

THREATS AND CONSERVATION ISSUES

- Kalyani Coke and Cogeneration Plant
- Mhadei Diversion Project, Khanapur *taluka*, Belgaum district
- Manganese mining
- Ecotourism
- Poaching
- Dandeli paper mill (West Coast Paper Industries)
- Kali Hydel Project
- Nagzira Power Plant
- Kodasalli and Kadra Power Plants
- Teak plantations
- Extraction of Bamboo

There are some serious environmental issues which threaten the sanctuary. The Kaiga-Narendra power line (440 KV) passes through the Bedhti and Kali valleys, and affects the Dandeli WLS.

The Kalyani Coke and Cogeneration Project (300 MW) in Khanapur district is seriously threatening the forests

DHRITIMAN MUKHERJEE

The thick forests of Dandeli WLS constitute the catchment area of various streams of the River Kali

of Dandeli WLS. The Mhadei river diversion project is another burning issue. The Karnataka Government has proposed six water retention structures (dams/*bandharas*) in part of the watershed of Mhadei river in Karnataka. The estimated catchment area according to Karnataka Government is 192.93 sq. km (Ibrampurkar 2012). This has also upset the Government of Goa as it will divert 22% of the state's water to Karnataka.

Mining of manganese ore is a serious problem for the sanctuary. The mining lobby is pressurizing the Forest Department to denotify some pristine areas of the sanctuary. Mining has now stopped inside Dandeli TR, but the mining company has attempted to afforest the area with *Acacia auriculiformes* which has changed the vegetation composition inside the PA.

Heavy tourism traffic is an upcoming threat to this IBA. Over the past few years, a number of resorts have come up in the vicinity of Dandeli WLS which provide various activities for tourists such as white water rafting in Kali river, rappelling, fishing, canoeing, kayaking, river crossing and so on.

While there are already six dams on the river, there was a proposal for the seventh one, which would further submerge hundreds of acres of forested land. The local communities got together and fought for years to have the project called off.

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Girish Jathar, David Stanton, Deepak Apte, Prachi Mehta, Jayanth Kulkarni.

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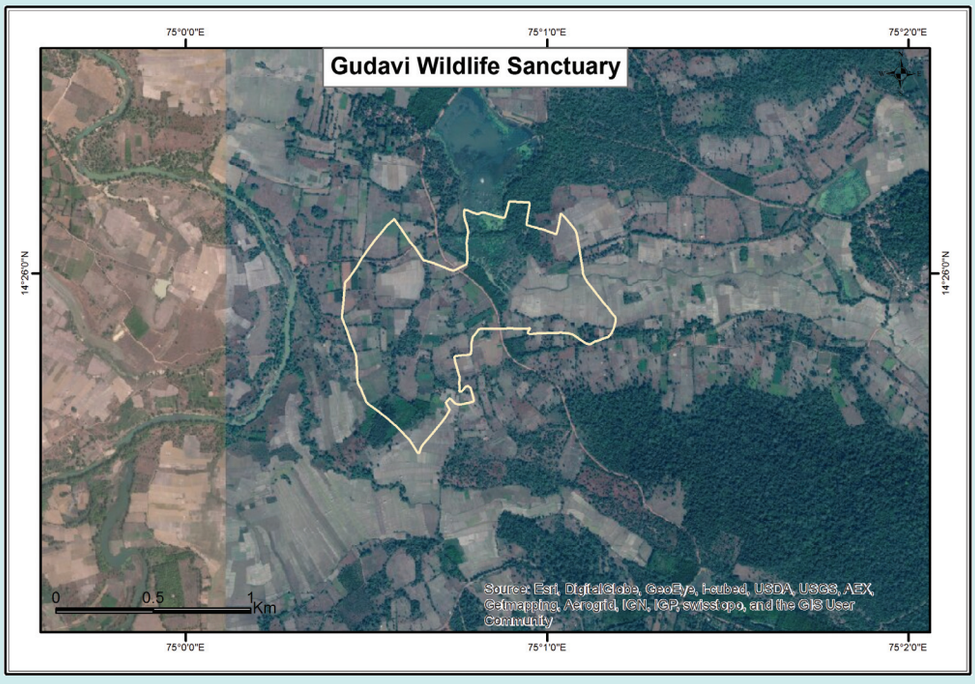
GUDAVI WILDLIFE SANCTUARY

IN-KA-11

IBA Site	: IN-KA-11	**Altitude**	: 560 msl
Administrative Region (State)	: Karnataka	**Rainfall**	: 1,000 mm
District	: Shimoga	**Temperature**	: 15 ºC to 38 ºC
Coordinates	: 14º 26' 30" N, 75° 01' 30" E	**Biogeographic Zone**	: Western Ghats
Ownership	: State	**Habitats**	: Tropical Moist Deciduous Forest, Reservoir
Area	: *c.* 74 ha		

IBA CRITERIA: A1 (Threatened species); A2 (Endemic Bird Area 123: Western Ghats), A4i (> 1% of biogeographic population)

PROTECTION STATUS: Wildlife Sanctuary, established July, 1989.



GENERAL DESCRIPTION

Gudavi Wildlife Sanctuary is one of the well-known sanctuaries of Karnataka. It is located 13 km from Sorab and 0.5 km from Gudavi village, in Shimoga district. Gudavi, a traditional nesting habitat for a number of colonial waterbirds, appears to have been in existence for well over a century. The sanctuary is a medium-sized tank of 30 ha with a raised bund, bordered on the eastern and southwestern sides by open Moist Deciduous Forest. The waterspread has been demarcated into a small southern and much larger northern sector by raised bunds. The smaller sector harbours heronries where 12 species of waterbirds breed from July to November. The northern sector is inhabited by a variety of resident and migratory waterbirds. *Vitex leucoxylon*, *Kirganelia reticulata*, and *Phyllanthus polyphyllus* trees in the tank provide these birds with good nesting sites (Manjrekar 2000). On its northern side, the sanctuary has agricultural fields. The water from the tank is used for irrigating paddyfields on the eastern side of the Varada river, which flows 0.5 km from the sanctuary (Lal *et al.* 1994). The tank gets flooded during the monsoon and becomes shallow and dry during summer. The average depth of water in the heronry is 1.5 m and the maximum depth is *c.* 2 m.

The vegetation around the tank is Moist Evergreen Deciduous type. The tank has floating lilies and *Azolla*, among other aquatic plants. Tree species on the periphery are dominated by *Vitex leucoxylon* and *Phyllanthus polyphyllus*.

AVIFAUNA

Gudavi is very popular with birdwatchers. Gururaja *et al.* (1993) identified 254 species. The sanctuary harbours 10,000–12,000 birds of various species. It provides traditional nesting sites for more than 5,000 Black-headed

Ibis *Threskiornis melanocephala* every year (B.B. Hosetti, *pers. comm.* 2003). BirdLife International (2001) has listed the Black-headed Ibis as Near Threatened. Wetlands International (2012) states that the 1% biogeographical population of this species is only 250. Therefore, Gudavi Wildlife Sanctuary holds a significant global population of this species. According to Ameen Ahmad (*pers. comm.* 2014), the Black-headed Ibis still breeds in thousands. A new nesting colony is known to have been established on the Varda river, formed by the excess/overflow population of nesting birds of Gudavi (Jayakumar, *pers. comm.* 2006)

Other species found nesting are cormorants, herons, and egrets (Ragunatha 1993, Desai 1999, Hegde 2002). Near Threatened species include a species of fish-eagle *Ichthyophaga*. Earlier, Grey-headed Fish-eagle *Ichthyophaga ichthyaetus* was listed, but after the split and many records of Lesser Fish-eagle *Ichthyophaga humilis*, it is not clear which species is found here. Vulture numbers have gone down drastically and now they are very rare.

In the surrounding forest, six restricted-range (endemic) species of the Western Ghats Endemic Bird Area (EBA 123) are found. If proper survey is done, more endemic species are likely to be found.

CRITICALLY ENDANGERED	
White-rumped Vulture (old record)	*Gyps bengalensis*
Long-billed Vulture (old record)	*Gyps indicus*
VULNERABLE	
Greater Spotted Eagle	*Clanga clanga*
Asian Woollyneck	*Ciconia episcopus*
NEAR THREATENED	
Oriental Darter	*Anhinga melanogaster*
Painted Stork	*Mycteria leucocephala*
Black-headed Ibis	*Threskiornis melanocephalus*
Great Thick-knee	*Esacus recurvirostris*
Pallid Harrier	*Circus macrourus*
River Tern	*Sterna aurantia*
Malabar Pied Hornbill	*Anthracoceros coronatus*
Grey-headed Bulbul	*Microtarsus priocephalus*
ENDEMIC BIRD AREA 123: WESTERN GHATS	
Malabar Parakeet	*Psittacula columboides*
Malabar Grey Hornbill	*Ocyceros griseus*
Malabar Barbet	*Psilopogon malabaricus*
Wynaad Laughingthrush	*Dryonastes delesserti*
Grey-headed Bulbul	*Microtarsus priocephalus*
White-bellied Treepie	*Dendrocitta leucogastra*

OTHER KEY FAUNA

As this is a small wetland sanctuary for birds, surrounded by agricultural fields and human habitation, large mammals are absent. However, Bonnet Macaque *Macaca radiata*, South Western Langur *Semnopithecus hypoleucos*, Wild Boar *Sus scrofa*, Black-naped Hare *Lepus nigricollis*, and

AMIT MISHRA

Ten years ago, up to 5,000 Black-headed Ibis were recorded breeding in this sanctuary. The latest exact figures are not available

Golden Jackal *Canis aureus* are seen in the environs. Flap-shell Turtle *Lissemys punctata* inhabits the waters of the tank area (Ragunatha 1993).

LAND USE

- Agriculture
- Tourism and recreation
- Nature conservation and research

THREATS AND CONSERVATION ISSUES

- Siltation
- Cattle grazing
- Illegal tree cutting
- Firewood collection
- Disturbance to birds
- Expansion of agriculture
- Ritual hunting of Flap-shell Turtle

The sanctuary is managed by the State Forest Department. Shooting and trapping are strictly prohibited by the Indian Wildlife (Protection) Act, 1972. However, fishing, grazing, cutting of trees and grasses for firewood, fodder, and other domestic agricultural purposes are the major activities in the sanctuary. The surrounding areas are under paddy cultivation and arecanut plantations. The freshwater tank is threatened by siltation and degradation of vegetation in the catchment area, mainly because of overgrazing by cattle from surrounding villages. Ritual hunting of Flap-shell Turtle *Lissemys punctata punctata*, that inhabits the tank water in hundreds, was observed in the past every June, when the whole village hunted in the shrinking waterspread (Ragunatha 1993). The practice is known to have continued till recently.

During 2006, large numbers of raised islands were made in the heronry and waterspread of the tank as part of a developmental programme. It was suggested that no more new islands should be made in the waterspread area as it would affect open-water birds. This was important, keeping in view the overall reduction of the open-water area that was available prior to erecting the new bund to further bifurcate the Gudavi pond. Any further construction of raised islands would adversely affect the migratory waterbirds that visit the sanctuary during winter (Subramanya & Madhukar 2006).

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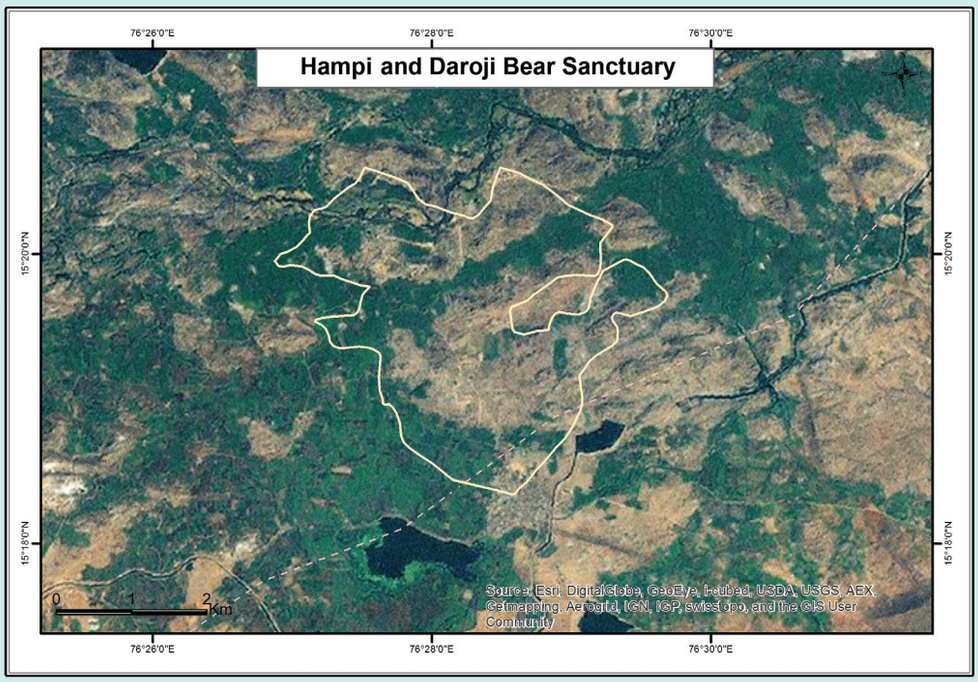
HAMPI AND DAROJI BEAR SANCTUARY

IBA Site	: IN-KA-12	**Altitude**	: 450 msl
Administrative Region (State)	: Karnataka	**Rainfall**	: 501 mm
District	: Bellary	**Temperature**	: 7–42.9 ºC
Coordinates	: 15º 09' 00" N, 76° 55' 00" E	**Biogeographic Zone**	: Deccan Peninsula
Ownership	: State	**Habitats**	: Tropical Thorn Forest, Tropical Secondary Scrub
Area	: 60 + 82.7 sq. km		

IBA CRITERIA: A1 (Threatened species); A2 (Secondary Area s072: Southern Deccan Plateau),

PROTECTION STATUS: Hampi is recognized by UNESCO as a World Heritage Site of archaeological importance. Daroji Bear Sanctuary was declared a Wildlife Sanctuary in October, 1994



GENERAL DESCRIPTION

Hampi, which was founded in the 14th century CE as the capital of the Vijayanagara Empire, lies in the heartland of the Deccan of Karnataka state. It is 350 km from Bengaluru (=Bangalore). The Hampi ruins are spread over an area of *c.* 60 sq. km, protected by the river Tungabhadra to the north and by rocky granite ridges on the other three sides. Hampi and Anegundi area is recognized by UNESCO as a World Heritage Site of archaeological importance.

Near this historic site lies Daroji Bear Sanctuary, spread over an area of 8,272.80 ha (82 sq. km). This rocky scrub jungle was notified as a Bear Sanctuary on 17.10.1994. The sanctuary exhibits a success story of natural regeneration of forest. Abundant growth of dry zone flora and fauna flourishes in this sanctuary owing to strict conservation. Daroji Bear Sanctuary and the Hampi monuments, which are protected by the Archaeological Survey of India, together provide a safe haven for birds and other fauna.

AVIFAUNA

This site has been selected an IBA as it holds a significant healthy population of Yellow-throated Bulbul *Pycnonotus xantholaemus*, a globally Threatened species, of which it is a well-known habitat. More than 100 years ago, Allen (1908) saw about 20 pairs in June, 1901 in Bellary district. Subramanya *et al.* (2006) observed two individuals at Hampi in June, 1990 during a short trip. This bulbul is restricted to the southern Deccan plateau (BirdLife International 2001). Protection of its dry thorny habitat at Daroji Bear Sanctuary provides much needed respite from the habitat destruction that has been going on. The bulbul is common wherever its habitat is relatively intact (Subramanya

BIOME 11: INDO-MALAYAN TROPICAL DRY ZONE	
Red-naped Ibis	*Pseudibis papillosa*
White-eyed Buzzard	*Butastur teesa*
Red-headed Falcon	*Falco chicquera*
Jungle Bush-quail	*Perdicula asiatica*
Rock Bush-quail	*Perdicula argoondah*
Painted Spurfowl	*Galloperdix lunulata*
Indian Peafowl	*Pavo cristatus*
Yellow-wattled Lapwing	*Vanellus malabaricus*
Indian Courser	*Cursorius coromandelicus*
Yellow-legged Green-pigeon	*Treron phoenicoptera*
Plum-headed Parakeet	*Psittacula cyanocephala*
Sirkeer Malkoha	*Phaenicophaeus leschenaultii*
Common Indian Nightjar	*Caprimulgus asiaticus*
Indian Grey Hornbill	*Ocyceros birostris*
Black-rumped Flameback	*Dinopium benghalense*
White-naped Flameback	*Chrysocolaptes festivus*
Ashy-crowned Sparrow-lark	*Eremopterix grisea*
Syke's Crested Lark	*Galerida deva*
Black-headed Cuckooshrike	*Coracina melanoptera*
Indian Robin	*Saxicoloides fulicata*
Tawny-bellied Babbler	*Dumetia hyperythra*
Large Grey Babbler	*Turdoides malcolmi*
Jungle Babbler	*Turdoides striatus*
White-headed Babbler or Yellow-billed Babbler	*Turdoides affinis*
Rufous-fronted Prinia	*Prinia buchanani*
Jungle Prinia	*Prinia sylvatica*
Ashy Prinia	*Prinia socialis*
Grey-headed Starling	*Sturnia malabarica*
Brahminy Starling	*Sturnus pagodarum*

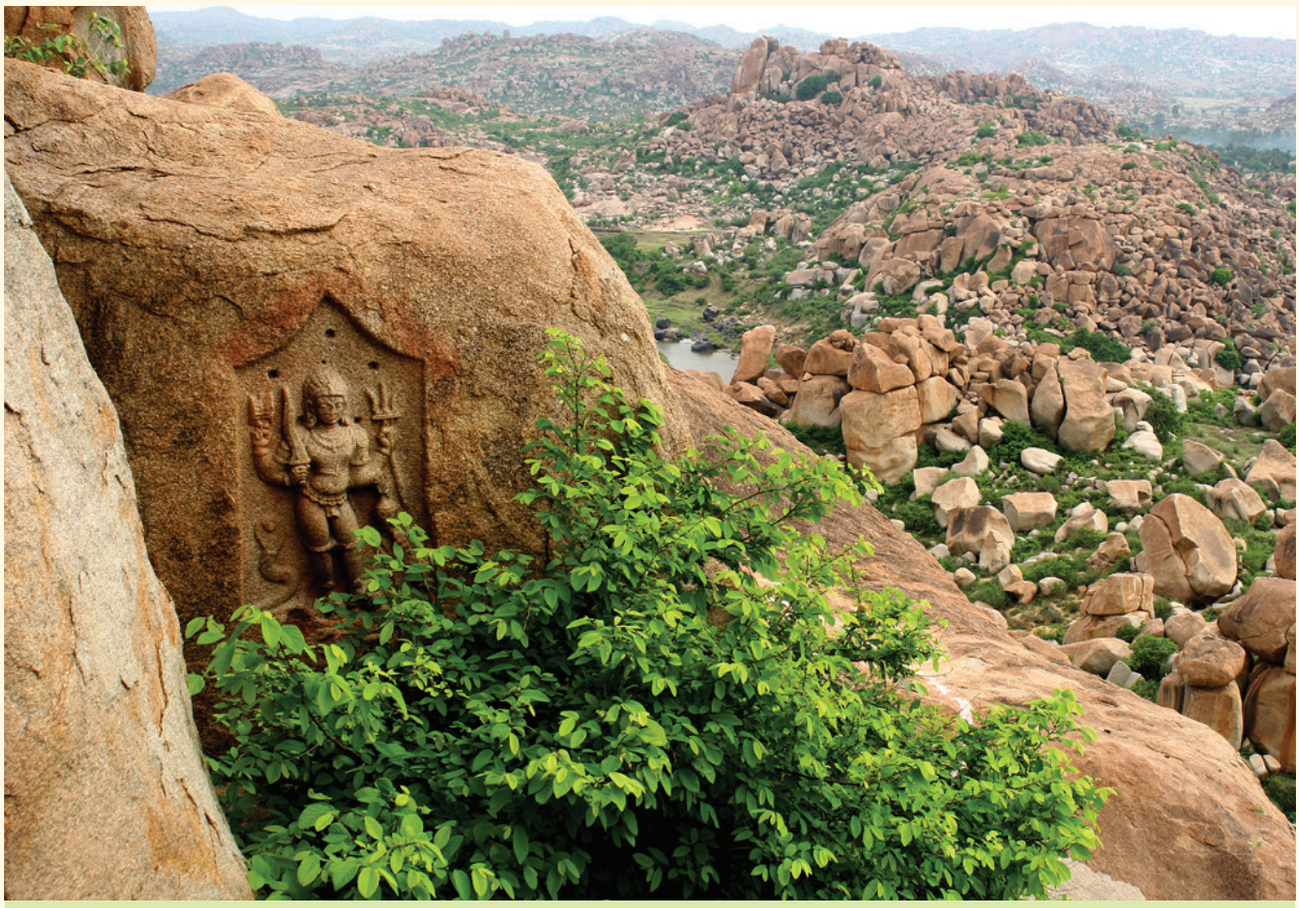
ENDANGERED	
Black-bellied Tern	*Sterna acuticauda*
VULNERABLE	
Asian Woollyneck	*Ciconia episcopus*
Yellow-throated Bulbul	*Pycnonotus xantholaemus*
NEAR THREATENED	
Spot-billed Pelican	*Pelecanus philippensis*
Oriental Darter	*Anhinga melanogaster*
Painted Stork	*Mycteria leococaphala*
Black-headed Ibis	*Threskiornis melanocephalus*
Red-headed Falcon	*Falco chicquera*
River Tern	*Sterna aurantia*
SECONDARY AREA S072: SOUTHERN DECCAN PLATEAU	
Yellow-throated Bulbul	*Pycnonotus xantholaemus*
BIOME 10: INDIAN PENINSULA TROPICAL MOIST FOREST	
Blue-faced Malkoha	*Phaenicophaeus viridirostris*

et al. 1995, 2006), leading Grimmett *et al*. (1998) to the conclusion that the species is common but localized. The total numbers cannot be high due to habitat constraints (BirdLife International 2001). According to Kottur (2014), it is found around Matanga Hill in Hampi, Daroji Bear Sanctuary, and Sannapura Forest in Koppal district.

Apart from this bulbul, *c*. 230 species of birds are listed in and around this area, including Painted Spurfowl *Galloperdix lunulata*, Sirkeer Malkoha *Phaenicophaeus leschenaultii*, Blue-faced Malkoha *Phaenicophaeus viridirostris*, Grey-necked Bunting *Emberiza buchanani*, Plum-headed Parakeet *Psittacula cyanocephala*, Indian Peafowl *Pavo cristatus*, Jungle Bush-quail *Perdicula asiatica*, Rock Quail *Perdicula argoondah*, Barred Button-quail *Turnix suscitator*, Yellow-legged Button-quail *Turnix tanki*, Common Indian Nightjar *Caprimulgus asiaticus*, White-eyed Buzzard *Butastur teesa*, and Spotted Owlet *Athene brama*.

SAMAD KOTTUR

Nearly 230 species of birds have been listed from this IBA, including Painted Spurfowl *Galloperdix lunulata*



SAMAD KOTTUR

Broken boulder-strewn countryside, typical of this IBA, is ideal habitat for Sloth Bear. It also provides a habitat for the Yellow-throated Bulbul *Pycnonotus xantholaemus*

Kottur (2014) has listed Long-billed Vulture *Gyps indicus* in his book *Birds of Hampi*, without giving the exact site where it was recorded.

OTHER KEY FAUNA

The habitats in and around Hampi and Daroji are ideal for Sloth Bear *Melursus ursinus*, Leopard *Panthera pardus*, Golden Jackal *Canis aureus*, Indian Fox *Vulpes bengalensis*, Indian Crested Porcupine *Hystrix indica*, Indian Pangolin *Manis crassicaudata*, Small Indian Civet *Viverricula indica*, Common Palm Civet *Paradoxurus hermaphroditus*, Jungle Cat *Felis chaus*, and Wild Boar *Sus scrofa*. Daroji Bear Sanctuary is a safe haven for Indo-Malayan Tropical Dry Zone species. A total of 41 butterfly species belonging to families Hesperiidae, Papilionidae, Pieridae, Lycaenidae, and Nymphalidae were recorded. Two species of butterflies recorded from this region have protected status under the Indian Wildlife (Protection) Act, 1972 (Harisha & Hosetti 2013).

LAND USE

- Tourism and recreation
- Nature conservation and research
- Archaeological activities

THREATS AND CONSERVATION ISSUES

- Fires during summer
- Disturbance to birds
- Tourism
- Excavation at Hampi
- Habitat alteration
- Changed crop pattern
- Hunting outside the PA
- Granite quarries and stone crushers outside the PA
- Industrial development (mining)

In 2010, the State Government granted permission for a major steel plant in the vicinity of Daroji and the agency even started the process of land acquisition (Chandra 2010). Studies indicated that the boundary of the proposed steel plant encroached well into the limits of the bear sanctuary. Timely intervention by environmentalists and subsequent surveys by the State Wildlife Board resulted in shifting of the steel plant.

Hampi and Anegundi area is recognized by UNESCO as a World Heritage Site of archaeological importance. The Karnataka Government, the Archaeological Survey of India with assistance from UNESCO, Smithsonian Institution, and several other agencies have undertaken the gigantic task of

SAMAD KOTTUR

SAMAD KOTTUR

Sloth Bear (left) is an iconic species of Daroji Bear Sanctuary. It is not commonly known that the endemic Yellow-throated Bulbul (seen above with Jungle Babbler *Turdoides striata*) is also found in this IBA

excavation in the 26 sq. km city. The principal remains are being mapped and many areas excavated to view the remains of temples, tanks, and other structures that have lain buried for centuries. A number of structural remains and scriptures are being carefully restored, in addition to partial rebuilding and replacement of building elements.

The Government of Karnataka declared Daroji as the first and southern India's only sanctuary for Sloth Bear, which began taking shape near the Hampi ruins. The final notification of this sanctuary has been completed. Daroji Sanctuary will be of great advantage for the fauna of Hampi, which encounter disturbance caused by tourists who visit the site.

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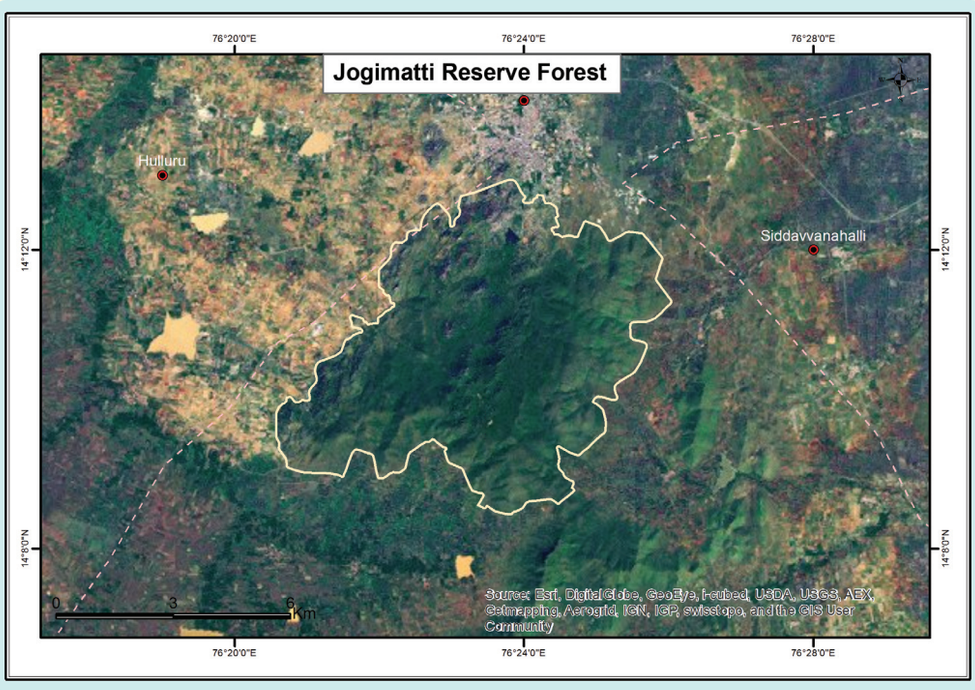
JOGIMATTI RESERVE FOREST

IBA Site	: IN-KA-13	**Altitude**	: 500–1,100 msl
Administrative Region (State)	: Karnataka	**Rainfall**	: 350–450 mm
District	: Chitradurga	**Temperature**	: 7 ºC to 42 ºC
Coordinates	: 14º 13' 00" N, 76° 13' 00" E	**Biogeographic Zone**	: Deccan Peninsula
Ownership	: State	**Habitats**	: Tropical Thorn Forest, Dry Srub
Area	: 10,718 ha		

IBA CRITERIA: A1 (Threatened species), A2 (Secondary Area s072: Southern Deccan Plateau)

PROTECTION STATUS: Reserve Forest, not officially protected.



GENERAL DESCRIPTION

A remarkable scrub forest, this IBA has been rejuvenated and transformed over the past two decades. It covers most of the low, rocky hills near Chitradurga town. Non-conventional wind energy is being harnessed on some of the hills. This site is reputed to be the most windy in southern India, with a relentless 50–60 kmph wind velocity all day long, throughout the year. The site is covered by Southern Tropical Thorn Forest and Dry Scrub Forest.

AVIFAUNA

The birdlife has not been studied, but Thejaswi Shivanand (*pers. comm.* 2001) indicated the presence of at least 110 species. The otherwise local and globally Threatened Yellow-throated Bulbul *Pycnonotus xantholaemus* is common here, with a very high encounter rate in this forest (Subramanya *et al.* 2007). The Critically Endangered White-rumped Vulture *Gyps bengalensis* used to be present earlier, but now it is rarely seen.

This site has been selected solely on the basis of its good population of Yellow-throated Bulbul. Not much information is available on the other species of birds.

OTHER KEY FAUNA

No information is available.

LAND USE

- Afforestation programmes
- Plantation
- Miniature zoo

THREATS AND CONSERVATION ISSUES

- Livestock grazing
- Poaching
- Firewood collection

IN-KA-13

SAMAD KOTTUR

Jogimatti area is supposed to be one of the most windy places in southern India. Therefore a large number of windmills have cropped up all over

CRITICALLY ENDANGERED	
White-rumped Vulture (old record)	*Gyps bengalensis*
VULNERABLE	
Yellow-throated Bulbul	*Pycnonotus xantholaemus*
SECONDARY AREA S072: SOUTHERN DECCAN PLATEAU	
Yellow-throated Bulbul	*Pycnonotus xantholaemus*

In the past, the area was heavily grazed and under pressure from firewood collection for the nearby Chitradurga town. A vigilant and concerned forest department at the local level planned afforestation with native scrub species after the land was handed over to them in the 1970s. Encroached land was reclaimed in the late 1990s and further afforestation efforts are now bearing fruit. The sudden increase in the sightings of the Yellow-throated Bulbul bears witness to this effort. The reason for the drop in firewood collection can be attributed to the growth of coconut and arecanut plantations throughout the western half of Chitradurga district. These plantations produce sufficient biomass to cater to the firewood needs of the local and regional populace. However, more efforts are required to curb poaching and the rampant livestock grazing in parts of the forest.

SAMAD KOTTUR

Jogimatti is covered with southern tropical thorn forest and dry scrub forest. It is an ideal habitat for the endemic Yellow-throated Bulbul *Pycnonotus xantholaemus*

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KARANJI TANK

IBA Site	: IN-KA-14	**Altitude**	: 750 msl
Administrative Region (State)	: Karnataka	**Rainfall**	: 770 mm
District	: Mysore	**Temperature**	: 15 ºC to 35 ºC
Coordinates	: 12º 18' 00" N, 76° 35' 60" E	**Biogeographic Zone**	: Deccan Peninsula
Ownership	: State	**Habitats**	: Freshwater Swamp, Tropical Secondary Scrub
Area	: 65 ha		

IBA CRITERIA: A4i (≥1% of biogeographic population)

PROTECTION STATUS: Not officially protected.

GENERAL DESCRIPTION

Karanji Tank is a tranquil lake located within Mysore city, and is home to a bustling colony of cormorants, storks, pelicans, and ibises. The tank is under the jurisdiction of Sri Chamarajendra Zoological Gardens, Mysore (Zoo Authority of Karnataka). The tank was restored with aid from Asian Development Bank by the Karnataka Urban Infrastructure Development Project. It has many islands, which are covered by *Barringtonia acutangula*, *Acacia nilotica*, and *Acacia auriculiformis*, which provide excellent tree cover and nesting sites for birds. A butterfly park has also been established in the premises. In recent years, dynamic and efficient management of Sri Chamarajendra Zoological Gardens, armed with legal support, cleared most of the encroachments on feeder canals. For a few years, vehicular traffic was prohibited in the morning hours, all along the western public road abutting the tank in order to provide safe foraging ground for waterbirds.

The important marsh flora includes *Nymphaea stellata*, *Rotala leptopetala*, *Lindernia parviflora*, *Bergia ammonioides*, *Ludwigia perennis*, *Typha angustata*, and *Najas graminea.* The tree species of the environs include *Acacia* sp., *Cassi*a spp., *Albizia lebbeck, Bauhinia* sp., and *Wrightia tinctoria.*

According to Islam & Rahmani (2008), Karanji Tank fulfills three Ramsar criteria: 2 (wetland supports threatened ecological communities), 4 (wetland provides refuge during adverse conditions to threatened species), and 6 (wetland regularly supports 1% of the individuals in a population of one species or subspecies). It is also Ramsar Wetland Type 6 (water storage impoundment).

AVIFAUNA

Karanji Tank and its surroundings have an impressive bird checklist of 147 species, of which 40 are migratory. Good breeding populations of Spot-billed Pelican *Pelecanus*

KISHEN DAS

Despite the fact that Karanji Tank is located within the city limits of Mysore, it supports a large herony. Nearly 150 bird species have been identified in this IBA

NEAR THREATENED	
Spot-billed Pelican	*Pelecanus philippensis*
Oriental Darter	*Anhinga melanogaster*
Painted Stork	*Mycteria leucocephala*
Black-headed Ibis	*Threskiornis melanocephalus*

philippensis, Oriental Darter *Anhinga melanogaster*, Painted Stork *Mycteria leucocephala*, and Black-headed Ibis *Threskiornis melanocephalus*, that nest on trees on the manmade islands, were instrumental in declaring Karanji Tank as an Important Bird Area. Prior to 2000, as many as 230 Spot-billed Pelican were seen. The Spot-billed Pelican used to breed in these islands until 1996 when floodwaters breached the bund and left the lake dry. The pelicans resumed breeding in November, 2002, with 33 nests recorded. Three species of cormorants, Little *Phalacrocorax niger*, Median *P. fuscicollis*, and Great *P. carbo*, and Oriental Darter breed here along with the nesting pelicans. Painted Storks also form a significant part (30%) of the colony. More than 700 Black-headed Ibis have been recorded breeding here during monsoon. According to Wetlands International (2012), the 1% population of this species in South Asia is only 250, so this site holds a significant number of this Near Threatened species.

Increased water levels submerged the manmade islands and weakened the roots of trees which fell, including those used for nesting. As a consequence, breeding populations of large waterbirds have disappeared since 2012.

This site has been selected as an IBA because significant numbers of the Spot-billed Pelican, and Black-headed Ibis breed here. It also has the potential to attract many more species in larger numbers in future.

OTHER KEY FAUNA

As the tank is inside Mysore town, no large wild mammal is found here. Commercial fish, including the introduced *Tilapia*, are farmed here.

LAND USE

- Conservation
- Water management

THREATS AND CONSERVATION ISSUES

No perceived threats, except the removal of natural vegetation and the loss of what was once a thriving breeding colony of large waterbirds.

Sewage water flowed into the lake for many years, but was recently diverted under public pressure. After a public outcry, a project under the ongoing Asian Development Bank funded Karnataka Urban Infrastructure Development Project was recently initiated to restore the lake and to prevent pollution. Under the project, all weeds in the waterspread of the lake were removed and highly silted zones were desilted. After restoration in 2003, Karanji Tank has been renamed Karanji Nature Park. Public entry is allowed with nominal charges during day time. Karanji Nature Park is now one of the most popular tourist destinations in Mysore. The park management has become entirely tourist-oriented, thus affecting the bird and butterfly habitats. To have a clear view and clean walkway, much of the natural vegetation has been removed and in some areas replaced with ornamental and exotic species. Tourists and nature lovers are lured by entertainment like boating, playground for children, active arboreal and aquatic birds including the breeding colony, a large aviary with colourful Indian and exotic birds, butterflies in the butterfly park with a variety of hostplants and greenery, which are maintained throughout the year.

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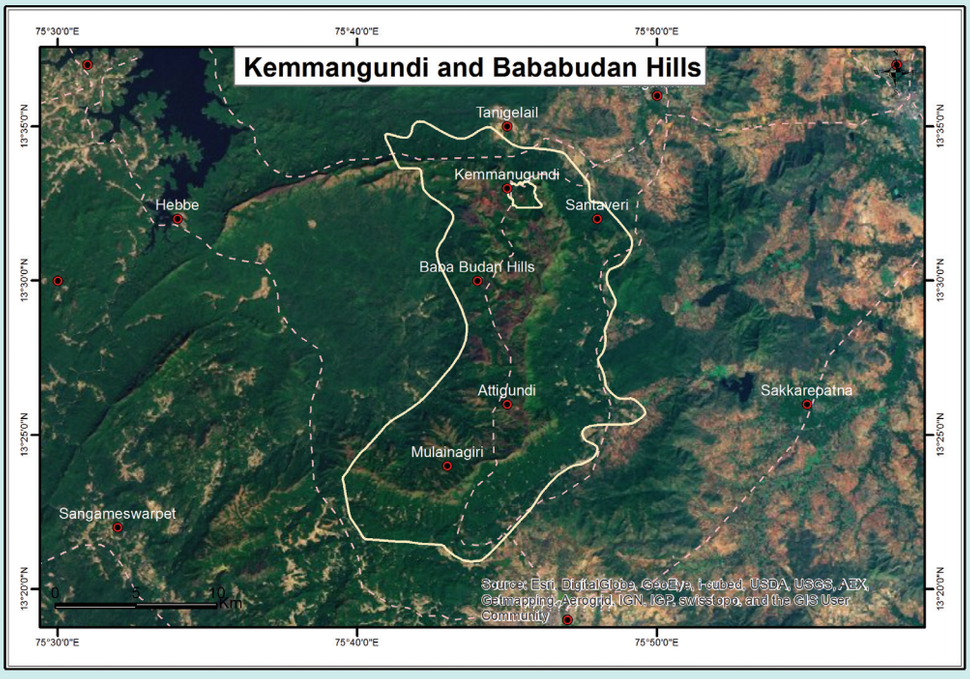
KEMMANGUNDI AND BABABUDAN HILLS

IBA Site	: IN-KA-15	**Rainfall**	: 2,500–3,500 mm
Administrative Region (State)	: Karnataka	**Temperature**	: 8 ºC to 28 ºC
District	: Chikmagalur	**Biogeographic Zone**	: Western Ghats
Coordinates	: 13º 28' 60" N, 75° 44' 00" E	**Habitats**	: Tropical Wet Evergreen, Tropical Semi-evergreen, Montane Wet Temperate Forest, Tropical Grassland
Ownership	: State		
Area	: 10,292 ha		
Altitude	: 700–1,923 msl		

IBA CRITERIA: A1 (Threatened species), A2 (Endemic Bird Area 123: Western Ghats), A3 (Biome 10: Indian Peninsula Tropical Moist Forest)

PROTECTION STATUS: Not officially protected.



GENERAL DESCRIPTION

The Bababudan Hills are a horse-shoe shaped range of high ridges. An eastern offshoot of the Western Ghats, the hills have a valley in the centre of the horse-shoe facing northwest, known as the Jagara Valley (600 m). The hills have an average height of 1,400 m, reaching a maximum of 1,923 m at Mulaianagiri, the highest peak in Karnataka. The ridges are narrow and steep, with cliffs cascading towards the outer end of the horse-shoe, interrupted by hill slopes on the inner side. The hills are covered with grassland on the slopes and luxuriant sholas (Southern Wet Temperate Montane Evergreen Forest) in the ravines and folds between the hills.

Kemmangundi is a small, pleasant hill station established on the northern end of the hill range in 1932 by the Maharaja of Mysore, Krishnaraja Wodeyar IV. At 1,434 m, it is located beside an abandoned open-cast iron mine. Kemmangundi in Kannada translates as 'red soil pit' (*kemmannu* = red soil, *gundi* = pit), referring to the soil colour in the mining pit as well as the surroundings. Mining for iron ore continues on a small scale on nearby hillsides. Extensive, dense sholas surround the place. Kemmangundi served as a base camp for Sálim Ali in 1940, when he visited the Bababudan Hills during his avifaunal survey of the erstwhile princely state of Mysore (Ali 1942–1943).

The vegetation is southern montane wet temperate forest, interspersed with southern montane wet tropical grasslands. The vegetation at Kemmangundi is degraded due to anthropogenic influences like the extension of the hill station, experimental potato farming, and laying of a

DHRITIMAN MUKHERJEE

Bababudan Hills are covered with southern montane wet temperate forest, interspersed with southern montane wet tropical grasslands. In the valleys, tropical wet evergreen semi-evergreen forest is found

VINAYAK YARDI

Nilgiri Wood-pigeon *Columba elphinstonii* is found in the sholas of Kemmangundi and Bababudan Hills

ENDANGERED	
Nilgiri Blue Robin	*Myiomela major*
VULNERABLE	
Nilgiri Wood-pigeon	*Columba elphinstonii*
Indian Broad-tailed Grass-warber	*Schoenicola platyurus*
NEAR THREATENED	
Black-and-Orange Flycatcher	*Ficedula nigrorufa*
Nilgiri Flycatcher	*Eumyias albicaudatus*
Tytler's Leaf-warbler	*Phylloscopus tytleri*
ENDEMIC BIRD AREA 123: WESTERN GHATS	
Nilgiri Wood-pigeon	*Columba elphinstonii*
Malabar Parakeet	*Psittacula columboides*
Malabar Grey Hornbill	*Ocyceros griseus*
Grey-headed Bulbul	*Microtarsus priocephalus*
Nilgiri Blue Robin	*Myiomela major*
Wynaad Laughingthrush	*Dryonastes delesserti*
Indian Rufous Babbler	*Turdoides subrufus*
Indian Broad-tailed Grass-warbler	*Schoenicola platyura*
Black-and-Orange Flycatcher	*Ficedula nigrorufa*
Nilgiri Flycatcher	*Eumyias albicaudatus*
White-bellied Blue Flycatcher	*Cyornis pallipes*
Small Sunbird	*Leptocoma minima*
White-bellied Treepie	*Dendrocitta leucogastra*
BIOME 10: INDIAN PENINSULA TROPICAL MOIST FOREST	
Sri Lanka Frogmouth	*Batrachostomus moniliger*
Jerdon's Nightjar	*Caprimulgus atripennis*
Indian Swiftlet	*Collocalia unicolor*
Malabar Trogon	*Harpactes fasciatus*
Malabar Pied Hornbill	*Anthracoceros coronatus*
White-cheeked Barbet	*Megalaima viridis*
Malabar Barbet	*Psilopogon malabarica*
Yellow-browed Bulbul	*Acritillas indica*
Malabar Whistling-thrush	*Myophonus horsfieldii*
Indian Scimitar-babbler	*Pomatorhinus horsfieldii*
Dark-fronted Babbler	*Rhopocichla atriceps*
Black-throated Munia	*Lonchura kelaarti*

formal garden, but the sholas are somewhat less disturbed. The lower slopes have *Eucalyptus* and coffee plantations (Shyamal 1993). The sholas along the Bababudangiri range are highly degraded and disturbed, many being planted over by *Eucalyptus*, and in some areas by *Pinus* sp. Some parts of Bababudan Hills are part of the core and buffer zones of Bhadra Tiger Reserve.

AVIFAUNA

Sálim Ali collected or recorded 69 species of birds in early 1940 (Ali 1942–1943). Based on these studies and various checklists in the last 10 years in online discussion groups and www.ebird.org, nearly 150 species of birds have been recorded from the area, including 13 of the 26 restricted-range species of the Western Ghats Endemic Bird Area (EBA 123). White-rumped Vulture *Gyps bengalensis* and Indian Vulture *G. indicus* that were reported historically no longer occur in this area. It is the only area in Karnataka where Nilgiri Blue Robin *Myiomela major* has been reported in recent years (Robin *et al.* 2006, 2010). The sholas around Kemmangundi hold a population of Nilgiri Wood-pigeon *Columba elphinstonii* (Shivanand, T. *pers. comm.* 2004), while the grasslands are important habitats for Broad-tailed Grassbird *Schoenicola platyura* (Shivanand, T. *pers. comm.* 2004; S. Subramanya, *pers. comm.* 2014), Malabar Crested Lark *Galerida malabarica* and Bright-headed Cisticola *Cisticola exilis*. Near Threatened species like Nilgiri Flycatcher *Eumyias albicaudatus* (Shivanand 2004), Tytler's Leaf-warbler *Phylloscopus tytleri* (Praveen 2007), and Black-and-Orange Flycatcher *Ficedula nigrorufa* (Praveen & Kuriakose 2006) have been reported. Though there are reports of Nilgiri Pipit *Anthus nilghiriensis* and Black-chinned Laughingthrush *Strophocincla cachinnans* from these hills, these records require further confirmation and are not included in the accepted distribution maps (Praveen & Nameer 2012, Robin *et al.* 2014).

The IBA lies in Biome 10 (Indian Peninsula Tropical Moist Forest). Altogether, 15 Indian species have been identified in this biome (BirdLife International 2013), of which 12 species are found in this IBA.

OTHER KEY FAUNA

Though no formal studies have been conducted in Bababudan Hills, much of the area is adjacent to the Bhadra Tiger Reserve and hence all mammal species found there are likely to occur in these hills. These include Asiatic Elephant *Elephas maximus*, Tiger *Panthera tigris*, Leopard *P. pardus*, Gaur *Bos gaurus*, Spotted Deer *Axis axis*, Sambar *Rusa unicolor*, Barking Deer *Muntiacus muntjak*, Mouse Deer *Moschiola indica*, Indian Giant Squirrel *Ratufa indica*,Wild Dog *Cuon alpinus*,Wild Boar *Sus scrofa*, and Sloth Bear *Melursus ursinus*.

Biju *et al.* (2014) conducted a survey in June, 2010 at Kemmangundi and discovered a new species of Dancing Frog, which they named White-cheeked Dancing Frog *Micrixalus candidus*.

LAND USE

- Nature conservation and research
- Forestry
- Tourism

THREATS AND CONSERVATION ISSUES

- Iron ore mining
- Poaching
- Firewood collection
- Tourism pressure, littering

Iron ore mining has reduced the shola forest cover and is proving to be a major reason for the siltation of streams and for landslides. Encroachment of forests by coffee estates is a major concern. A proposal to expand and privatize the

PUTTURAJU K.

Malabar Grey Hornbill *Ocyceros griseus,* an endemic species of the Western Ghats, is found in this IBA

hill station will have an adverse impact on the area, and should be stopped.

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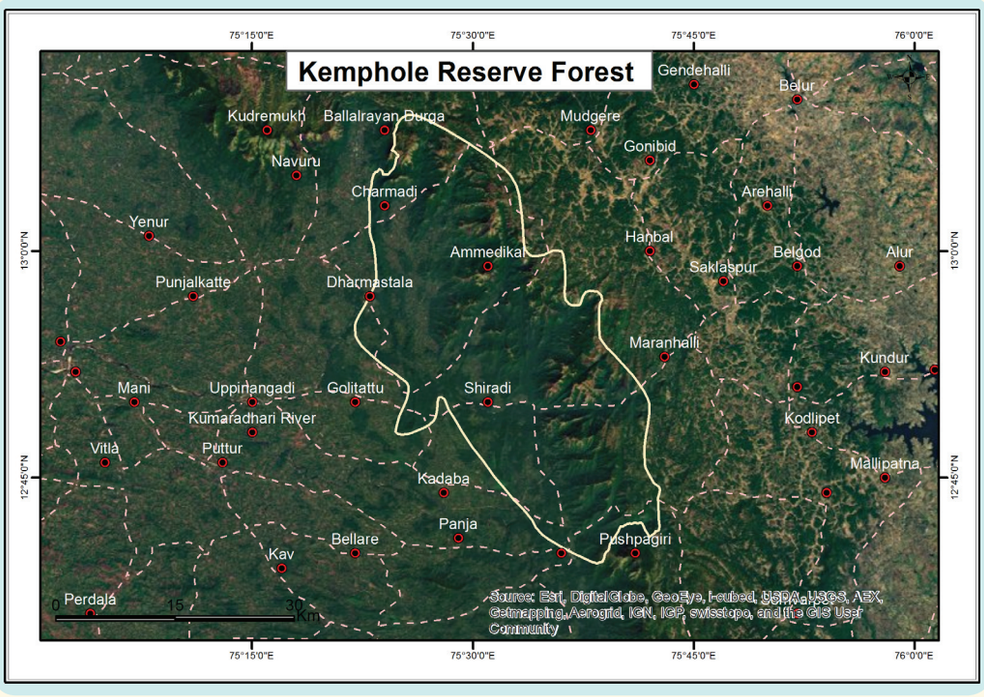
KEMPHOLE RESERVE FOREST

IBA Site Code	: IN-KA-16	**Altitude**	: 100–1,300 msl
Administrative Region (State)	: Karnataka	**Rainfall**	: 4,500–5,000 mm
District	: Hassan	**Temperature**	: 15 °C to 33 °C
Coordinates	: 13° 00' 00" N, 76° 04' 00" E	**Biogeographic Zone**	: Deccan Peninsula
Ownership	: State	**Habitats**	: Tropical Wet Evergreen Forest, Tropical Semi-evergreen Forest
Area	: 3,200 ha		

IBA CRITERIA: A2 (Endemic Bird Area 123: Western Ghats), A3 (Biome 10: Indian Peninsula Tropical Moist Forest)

PROTECTION STATUS: Notified as Reserve Forest.



GENERAL DESCRIPTION

This rich forest is part of a corridor of evergreen forests that link Kudremukh National Park in the north with Pushpagiri Wildlife Sanctuary in the south. River Kemphole, a tributary of the Netravati, flows through this forest, which is situated on Shiradi Ghat. Large coffee estates and arecanut farms adjoin the forest. National Highway NH 48, connecting Bengaluru and the port city of Mangalore, runs right through Kemphole Reserve Forest and its adjoining reserve forests for over 45 km. Heavy vehicular traffic, especially large lorries, are a frequent threat to wildlife in this IBA.

The main component of the vegetation is Tropical Semi-evergreen Forest, with a smaller proportion of Tropical Wet Evergreen Forest on the lower slopes.

AVIFAUNA

The birdlife has not been studied in detail, but according to T. Shivanand (*pers. comm*. 2001) around 73 species of birds are present. Stattersfield *et al*. (1998) have identified 16 restricted-range or endemic species in the Western Ghats Endemic Bird Area (EBA 123), of which eight species are found here. Five of these are considered as Near Threatened, while the remaining three, Malabar Parakeet *Psittacula columboides*, Indian Rufous Babbler *Turdoides subrufus*, and Small Sunbird *Leptocoma minima*, are common species listed in the Least Concern category of BirdLife International (2001).

The Western Ghats region lies in Biome 10 (Indian Peninsula Tropical Moist Forest). In the briefing book prepared by BirdLife International (undated), 15 species have been listed in this biome. T. Shivanand (pers. comm. 2003) has seen nine of these species in this IBA. Kemphole is selected as an IBA mainly based on the restricted-range species (A2), and also biome (A3) criteria.

NEAR THREATENED	
Grey-headed Bulbul	*Microtarsus priocephalus*

ENDEMIC BIRD AREA 123: WESTERN GHATS	
Malabar Parakeet	*Psittacula columboides*
Malabar Grey Hornbill	*Ocyceros griseus*
Grey-headed Bulbul	*Microtarsus priocephalus*
Wynaad Laughingthrush	*Dryonastes delesserti*
Indian Rufous Babbler	*Turdoides subrufus*
White-bellied Blue Flycatcher	*Cyornis pallipes*
Small Sunbird	*Leptocoma minima*
White-bellied Treepie	*Dendrocitta leucogastra*

BIOME 10: INDIAN PENINSULA TROPICAL MOIST FOREST	
Jerdon's Nightjar	*Caprimulgus atripennis*
Malabar Trogon	*Harpactes fasciatus*
Malabar Pied Hornbill	*Anthracoceros coronatus*
White-cheeked Barbet	*Megalaima viridis*
Malabar Barbet	*Psilopogon malabarica*
Yellow-browed Bulbul	*Acritillas indica*
Malabar Whistling-thrush	*Myophonus horsfieldii*
Indian Scimitar-babbler	*Pomatorhinus horsfieldii*
Dark-fronted Babbler	*Rhopocichla atriceps*

OTHER KEY FAUNA

Three species of primate have been recorded. These are Black-footed Grey Langur *Semnopithecus hypoleucos*, the endemic and Endangered Lion-tailed Macaque *Macaca silenus*, and Bonnet Macaque *Macaca radiata*. Among the larger carnivores are Leopard *Panthera pardus* and Sloth Bear *Melursus ursinus*. Large herbivores include the Asiatic Elephant *Elephas maximus*, Indian Muntjac or Barking Deer *Muntiacus muntjak*, Sambar *Rusa unicolor*, and Wild Boar *Sus scrofa*. Mouse Deer *Moschiola indica* is also reported from these forests, which serve as an important forest corridor for elephant migration. The Western Ghats endemic Travancore Flying Squirrel *Petinomys fuscocapillus* is also reported from here.

Reptiles include the Western Ghats Gliding Lizard *Draco dussumieri* and King Cobra *Ophiophagus hannah*. The Centre for Ecological Sciences (CES) of the Indian Institute of Science, Bengaluru lists 44 species of butterflies (two on Schedule I of the Wildlife Protection Act), 12 species of snakes and 23 amphibians, including the Critically Endangered Gundia Indian Frog *Indirana gundia* named after Gundia, the type locality.

LAND USE

- Forestry operations

THREATS AND CONSERVATION ISSUES

- Encroachments by coffee and arecanut plantations
- Poaching
- Legal and illegal timber extraction
- Road kills
- Plan for various dams and river diversion projects

A dam which is claimed to be generating 18 MW of electricity was built over Kemphole river inside this forest in early 2003. This dam has contributed to habitat destruction by drowning of a dense evergreen forest patch as well as due to the power transmission lines which were laid by cutting evergreen trees.

The Karnataka Power Corporation Ltd (KPCL) has proposed a 400 MW Hydroelectric Power Project, close to this IBA. KPCL wants to harvest power from Gundia river that runs through Hassan and Dakshina Kannada districts. Gundia is a tributary of the Kumaradhara river (which in turn is a tributary of the Netravati), formed by a number of small streams. It is these streams that KPCL would like to utilize for power generation.

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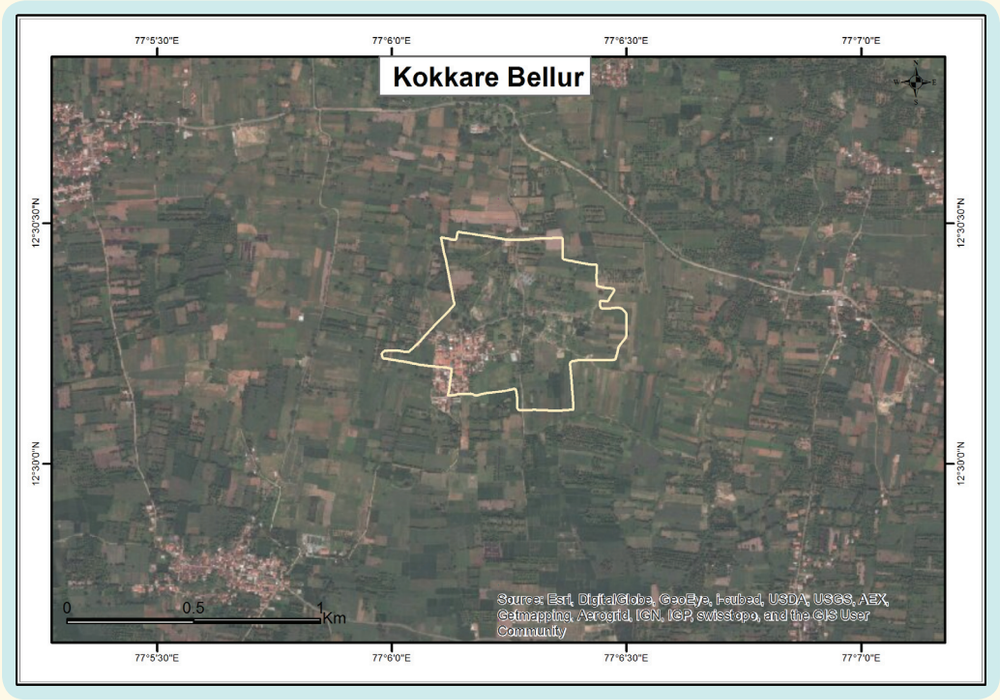
KOKKARE BELLUR

IBA Site Code	: IN-KA-17	**Area**	: Not available
Administrative Region (State)	: Karnataka	**Altitude**	: 850 msl
District	: Mandya	**Rainfall**	: 580 mm
Coordinates	: 12º 13' 53" N, 77º 05' 19" E	**Temperature**	: 15 ºC to 40 ºC
Ownership	: Gram Panchayat, Community	**Biogeographic Zone**	: Deccan Peninsula
		Habitats	: Subtropical Secondary Scrub

IBA CRITERIA: A1 (Threatened species), A4i (≥1% of biogeographic population)

PROTECTION STATUS: Not officially protected.



GENERAL DESCRIPTION

Kokkare Bellur is situated *c.* 80 km from Bengaluru (=Bangalore) in Maddur *taluk* of Mandya district. Shimsha, a small perennial river, runs nearby. From December to June, hundreds of Spot-billed Pelican *Pelecanus philippensis* and Painted Stork *Mycteria leucocephala* move from the lakes of south India to establish breeding colonies on the tall trees in the very heart of the village. Over the next six months, bird and man co-exist peacefully, it is as if the entire village has acquired a second storey. 'Upstairs' the birds court, mate, and rear their young ones, and 'below' life for the people of the village goes on. Even in the midst of wedding celebrations, when loudspeakers blare music all over the village, the raucous sounds of the birds, the flapping of heavy wings, and the clatter of stork bills continue unaffected (Manu & Jolly 2000).

The main reasons why such a large number of storks and pelicans, both exclusively fish-eaters, continue to breed in Kokkare Bellur, are three: i) there are a large number of wetlands distributed around the breeding site that sustain this breeding colony; ii) the village provides a large number of trees to nest on; and iii) the site enjoys protection by the villagers and is thus a safe breeding site for the birds. What is certain, however, is that both species have been coming here to breed for generations; village legends put it at over hundreds of years. The very name of the place, Kokkare, meaning stork, bears this out. This must surely be a reference to the original village of Kokkare Bellur which dates back several hundred years. A hero-stone, dug up in a villager's field in 1974, commemorates the death of an inhabitant of Bellur (presumably someone prominent) after a hunting accident.

After a plague epidemic in 1916, the old village was abandoned and the population resettled a couple of kilometres from the river. Apparently, the birds came too. Possibly the Shimsha, today a fast-flowing, shallow river (due to uncontrolled sand-dredging on the banks), was then deep and slow moving, and offered a foraging site for the pelicans. Today, the birds feed at the abundant lakes and irrigation tanks up to 100 km from the village (Manu & Jolly 2000). The main tanks are Sulekere (IBA), Malavalli Kere, Koppe Kere, Marehalli Kere, Shetty Kere, and Karanji Kere.

According to Saxena (1980), the pelicans arrive first (by November) to settle on the crowns of mature, large-canopied trees. The lighter, more agile storks come a few weeks later (by December-January), taking up residence on the outer branches. They also colonize smaller trees, which are too flimsy for the pelicans.

Kokkare Bellur is a typical dry land village with cultivated and fallow fields, cactus hedges, and trees, both old and young, in the fields and in the village.

Islam & Rahmani (2008) suggested Kokkare Bellur as a potential Ramsar Site as it qualified for Ramsar Criteria 2 (wetland supports threatened ecological communities) and Criteria 6 (wetland regularly supports 1% of the individuals in a population of one species or subspecies). It comes under Ramsar Wetland Type 6 (water storage impoundment).

Pathak (2009) has described the conservation issues of Kokkare Bellur in great detail.

During the breeding season, the mortality of nestlings that fall off their nests is substantial. To mitigate this, a conservation programme was started to collect all fallen nestlings and rear them to adulthood by feeding them fish in a nursery set-up by the conservation group. Once the birds were able to fly, they joined the adult breeding birds and returned to the wild (Subramanya & Manu 1996). The fallen nestlings are reared in a pen even today. Owing to these conservation efforts the population of birds has almost doubled since 1995 (S. Subramanya, *pers. comm.* 2014).

AVIFAUNA

Besides the pelicans and storks, which are the star attraction of this IBA, 141 bird species have been identified (Manu & Jolly 2000). This site is identified as an IBA mainly because of its significant breeding population of Spot-billed Pelican. This is also one of the best examples of community protected areas in India.

CRITICALLY ENDANGERED	
White-rumped Vulture (old record)	*Gyps bengalensis*
NEAR THREATENED	
Spot-billed Pelican	*Pelecanus philippensis*
Painted Stork	*Mycteria leucocephala*
Black-headed Ibis	*Threskiornis melanocephalus*
Red-headed Falcon	*Falco chiquera*

OTHER KEY FAUNA

No large wild mammal is reported from this area. There is no data on reptiles and amphibians.

LAND USE

- Agriculture
- Nature conservation and research

THREATS AND CONSERVATION ISSUES

- Lopping and felling of nesting trees
- Tourism
- Bridge building
- Over-zealous photographers

Apart from agriculture, the main sources of livelihood are animal husbandry (sheep and goats) and sericulture. Sand from the river is dredged and transported by manpower and bullock cart (this dredging is totally unregulated). Many of the women and young men work as daily wage labourers in the sugarcane fields of the surrounding areas. People also go to the nearest town for work.

The main resource of the village is the trees. The wood provides fuel and the leaves serve as fodder for livestock and silkworms.

A unique and important resource much prized in the village is the guano or bird droppings from the colonies of Spot-billed Pelicans and Painted Storks nesting in the village trees. These birds are mainly fish-eaters, and provide copious quantities of phosphate and nitrogen-rich fertilizer, which the villagers have traditionally used to fertilize their fields. The farmers spread red earth and agricultural waste in layers beneath the nesting trees regularly, right through the breeding season, to trap guano. This mixture of red earth, farm waste, and guano decompose over the six months nesting season and turn into well-decomposed compost, which is used to fertilize the crop fields during monsoon.

The farmers barter foodgrain for guano to use it as a fertilizer. But now this system is changing. Rich farmers increasingly grow cash crops and use chemical fertilizers and pesticides, whereas earlier they grew dry land millets and beans (Pathak 2009).

Kokkare Bellur is one of the better known examples of a people-initiated conservation effort (Pathak 2009). A few members of the Mysore Amateur Naturalists (MAN), a local NGO, have been living in Kokkare Bellur and have reported that nesting areas in the village are being threatened. Since 1994, MAN has been working to bring back harmony between the birds and humans. MAN has established a local youth group called Hejjarle Balaga

V. KANNAN

Kokkare Bellur is one of the finest examples of community conservation in India. Mysore Amateur Naturalists, a local NGO, has been doing commendable conservation work in this area

(Pelican Clan) to look after the welfare of the birds in general and fallen and injured pelican and stork chicks in particular. A local farmer, B. Linge Gowda, donated part of his land for the establishment of a pen which has been fenced so that dogs and other predators do not kill the chicks. Up to 2006, the youth and children of Hejjarle Balaga have restored around 300 pelicans into the wild (Pathak 2009).

A recent problem is the increase in the number of crows in the village that constantly prey upon the eggs and chicks. The storks are easily disturbed by the presence of outsiders as they move about the nesting sites (though apparently not by the movement of local villagers). The crows take this opportunity to attack the nests. Mysore Amateur Naturalists has appealed for help in tackling the crow problem and the management of the area in general.

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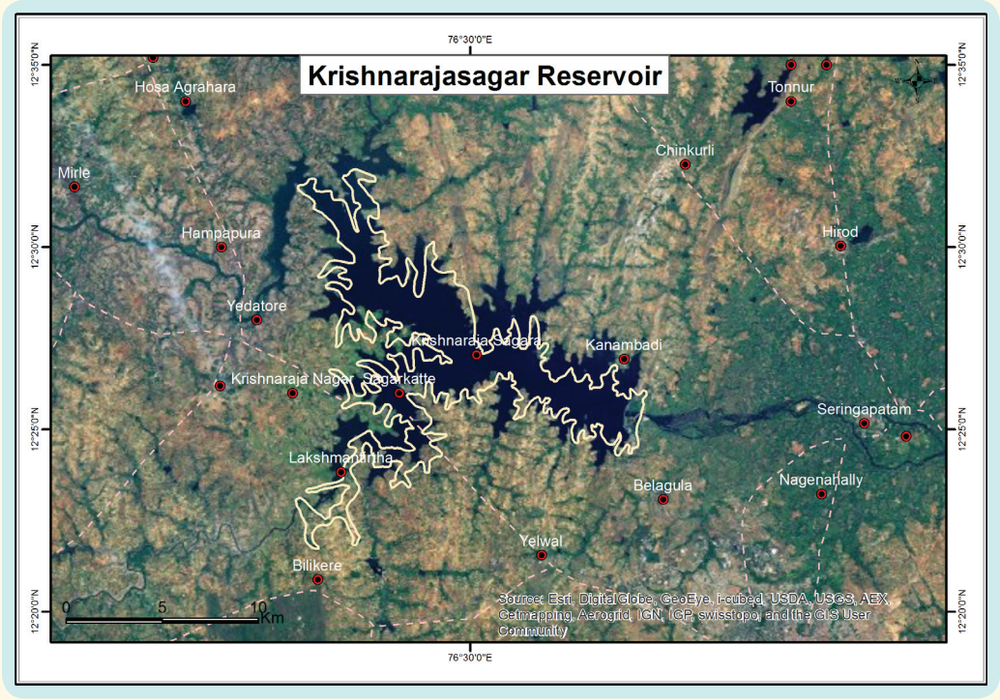
KRISHNARAJASAGAR RESERVOIR

IN-KA-18

IBA Site Code	: IN-KA-18	**Altitude**	: 400 msl
Administrative Region (State)	: Karnataka	**Rainfall**	: 500 mm
District	: Mysore, Mandya	**Temperature**	: 15 °C to 40 °C
Coordinates	: 12° 24' 00" N, 76° 25' 60" E	**Biogeographic Zone**	: Deccan Peninsula
Ownership	: State	**Habitats**	: Freshwater Reservoir and Marshes
Area	: 12,500 ha		

IBA CRITERIA: A1 (Threatened species), A4i (≥1% of biogeographic population), A4iii (≥20,000 waterbirds)

PROTECTION STATUS: Not officially protected.



GENERAL DESCRIPTION

The 12,500 ha Krishnarajasagar Reservoir was formed by impounding the Kaveri river at Kannambadi in 1924. It is located at the confluence of three rivers, the Kaveri and its tributaries: Hemavathi and Lakshmanathirtha. It is one of the earliest large dams constructed in India and at present irrigates 0.4 million hectares of land in Mysore and Mandya districts of southern Karnataka.

Large marshes form at the points where the rivers enter the reservoir. These marshes are created every year as the reservoir fills up by September, and are used by thousands of migrant waders on passage. The marshes and mudflats expand as water is withdrawn from the reservoir for irrigation and reach a peak in December-February.

Millet, sorghum, and vegetables are cultivated around the reservoir. The floodplain marshes are used in summer to cultivate vegetables. During monsoon, water lilies are cultivated for their edible roots.

Islam & Rahmani (2008) have proposed Krishnarajasagar as a potential Ramsar Site as it qualifies for Ramsar Criteria 2 (wetland supports threatened ecological communities), Criteria 5 (wetland regularly supports 20,000 or more waterbirds), and Criteria 6 (wetland regularly supports 1% of the individuals in a population of one species or subspecies). It comes under Ramsar Wetland Type 6 (water storage impoundment).

AVIFAUNA

This site is very important for congregations of ducks and waders in the region. Based on earlier reports, it supports large flocks of Northern Pintail *Mareca acuta*, the annual total of which exceeds 15,000. It also supports substantial flocks of at least 500 Bar-headed Goose *Anser indicus* and over 1,600 Brown-headed Gull *Larus brunnicephalus*, more than their 1% threshold limits of 560 and 1,400 respectively (see Wetlands International

KISHEN DAS

The sprawling 12,000 ha reservoir of Krishnarajasagar plays an important role in the irrigation of the dry districts of Mysore and Mandya. It also harbours a variety of waterfowl

CRITICALLY ENDANGERED	
White-rumped Vulture (old record)	*Gyps bengalensis*
ENDANGERED	
Egyptian Vulture	*Neophron percnopterus*
VULNERABLE	
Greater Spotted Eagle	*Clanga clanga*
Asian Woollyneck	*Ciconia episcopus*
NEAR THREATENED	
Oriental Darter	*Anhinga melanogaster*
Spot-billed Pelican	*Pelecanus philippensis*
Painted Stork	*Mycteria leucocephala*
Black-headed Ibis	*Threskiornis melanocephalus*
Pallid Harrier	*Circus macrourus*
Red-headed Falcon	*Falco chicquera*
Eurasian Curlew	*Numenius arquata*
Black-tailed Godwit	*Limosa limosa*
Great Thick-knee	*Esacus recurvirostris*
River Tern	*Sterna aurantia*

2012 for 1% population thresholds). Huge flocks of waders, numbering in thousands, winter in the marshes. These include over 3,500 Little Stint *Calidris minuta* and 2,000 Temminck's Stint *C. temminckii*, both over their 1% biogeographic population threshold mark of 2,000 and 750, respectively (Wetlands International 2012). During normal rainfall years, waterfowl counts vary between 25,000 and 29,000 birds (A4iii criteria). During the spring migration from late March to early April, the wader and duck numbers swell up to 50,000–70,000 for a couple of weeks. It is important to conduct regular monitoring surveys at this site to know the latest numbers of birds.

The reservoir marshes are most important as the wintering ground for a large number of Greater Spotted Eagle *Clanga clanga*. Every year, six to eight individuals can be seen in the reservoir.

The dry fields around the reservoir support enormous flocks of Rosy Starling *Sturnus roseus* (>7,000 recorded), Greater Short-toed Lark *Calandrella brachydactyla* (>2,500 seen), and smaller flocks of migratory Blyth's Pipit *Anthus godlewskii*, Richard's Pipit *A. richardi*, Tawny Pipit *A. campestris*, and Tree Pipit *A. trivialis*, as well as the Red-headed Bunting *Emberiza bruniceps* and several wagtails *Motacilla* spp.

OTHER KEY FAUNA

No information

LAND USE

- Irrigation
- Agriculture

THREATS AND CONSERVATION ISSUES

- Pesticides
- Siltation

The marshes around the reservoir are used to grow vegetables in summer and this results in rampant use of pesticides that permeate the food chain at various points. This issue needs to be urgently addressed.

KEY CONTRIBUTOR

A. Shivaprakash

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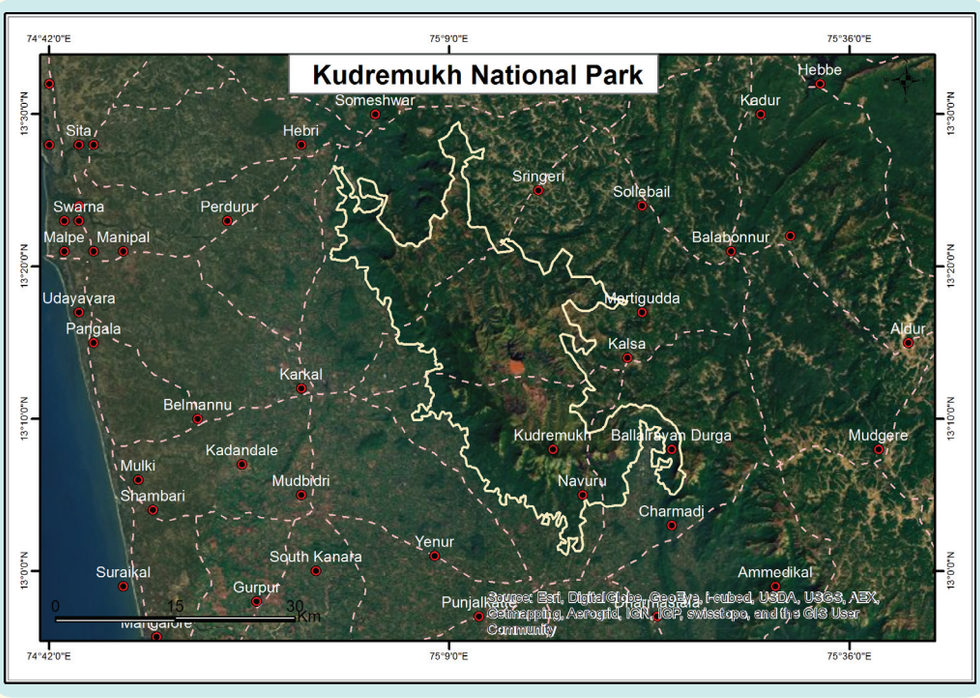
KUDREMUKH NATIONAL PARK

IN-KA-19

IBA Site Code	: IN-KA-19	**Rainfall**	: 1,778–6,350 mm
Administrative Region (State)	: Karnataka	**Temperature**	: 17 °C to 28 °C
District	: Chikmagalur	**Biogeographic Zone**	: Western Ghats
Coordinates	: 13° 21' 02" N, 75° 18' 27" E	**Habitats**	: Tropical Wet Evergreen Forest, Tropical Semi-evergreen Forest, Montane Wet Temperate Forest, Montane Grassy Slopes
Ownership	: State		
Area	: 60,032 ha		
Altitude	: 134–1,892 msl		

IBA CRITERIA: A1 (Threatened species), A2 (Endemic Bird Area 123: Western Ghats), A3 (Biome 10: Indian Peninsula Tropical Moist Forest)

PROTECTION STATUS: National Park, established September, 1987.



GENERAL DESCRIPTION

Kudremukh National Park is located in the central Western Ghats and bears a highly complex vegetation mosaic of Tropical Wet Evergreen and Tropical Semi-evergreen Forest, Montane Wet Temperate Forest (Shola) and Montane Grassy Slopes, richly nourished by several hill streams and torrents (Krishnamurthy *et al*. 2000). This park is the largest protected area in the central Western Ghats. There are coffee and tea estates on the north and east, and varying elevation as the Ghats descend from an average of 1,500 msl to sea level on the western side. To the northwest, an evergreen forest corridor connects Kudremukh NP to the Someshwara Wildlife Sanctuary. A central ridge runs north-south through the park, with the highest point at Kudremukh Peak (1,892 m). Shola forest and grasslands dominate above 1,400 m, while lowland evergreen forest is present at lower elevations on both western and eastern slopes of the hills. The Netravati, Tunga, and Bhadra rivers originate in this park.

AVIFAUNA

Nearly 170 bird species have been recorded by an environment impact assessment report of the Centre for Ecological Sciences, Indian Institute of Science, Bangalore (Anon. 2001). Hussain *et al.* (1999) also gave a checklist of the birds of Kudremukh. Praveen & Kuriakose (2006) noted Black-and-Orange Flycatcher *Ficedula nigrorufa* in Kudremukh. However, the area has not been intensively studied for avifauna.

This IBA is crucial to the conservation of biome species. Fifteen species have been identified by BirdLife International (undated) in Biome 10 (Indian Peninsula Tropical Moist Forest). Except for two species (Pacific Swallow *Hirundo tahitica* and Loten's Sunbird *Cinnyris lotenia*), all the rest are found in this IBA, confirming the high value of this site for bird conservation. Probably, these two species would also be found at this site if detailed studies were conducted.

Although we have included Indian Broad-tailed Grass-warbler *Schoenicola platyurus* based on earlier records, it was not found during intensive survey of the grasslands in 2005 (S. Subramanya, *pers. comm*. 2014).

OTHER KEY FAUNA

The park is very rich in wildlife, with 42 species of mammals, 52 species of reptiles, 35 species of amphibians, and 149 species of butterflies reported till now (Anon. 2001). Three species of primates recorded are the endemic and Endangered Lion-tailed Macaque *Macaca silenus*, and the more common Bonnet Macaque *Macaca radiata*. Groves (2001) upgraded different subspecies of *Semnopithecus* to full species status. According to this classification, possibly Blackfooted Grey Langur *S. hypoleucos*, which IUCN lists as Vulnerable, occurs here.

Among the larger carnivores are Tiger *Panthera tigris*, Leopard *P. pardus*, Wild Dog *Cuon alpinus*, and Sloth Bear *Melursus ursinus*. Large herbivores include Asiatic Elephant *Elephas maximus*, Barking Deer *Muntiacus muntjak*, Cheetal *Axis axis*, Sambar *Rusa unicolor*, Gaur *Bos gaurus*, and Wild Boar *Sus scrofa*. Mouse Deer *Moschiola indica* is also present, but difficult to see due to its secretive nature. Indian Crested Porcupine *Hystrix indica* and Black-naped Hare *Lepus nigricollis* are present. Reptiles include the Western Ghats Gliding Lizard *Draco dussumieri*, King Cobra *Ophiophagus hannah*, and Bamboo Pit Viper *Trimeresurus gramineus*.

Scientists in the Department of Post-Graduate Studies and Research in Environmental Science, Kuvempu University, Karnataka have discovered a new species of frog, endemic to the Western Ghats, in the forests of the Kudremukh National Park. This species of *Nyctibatrachus* (night frog) has been named *N. hussaini* after the well- known Indian naturalist, S.A. Hussain (Krishnamurthy *et al*. 2000).

Recently, Vijayakumar *et al*. (2014) have identified a new species of bush-frog named after the unique colour of its groin and other underparts, *Raorchestes indigo*. It is a range-restricted species, found above 1700 m in stunted forests around the highest peak in the Kudremukh Massif. It could be present in other similar areas.

VULNERABLE	
Nilgiri Wood-pigeon	*Columba elphinstonii*
Broad-tailed Grass-warbler	*Schoenicola platyurus*
NEAR THREATENED	
Malabar Pied Hornbill	*Anthracoceros coronatus*
Nilgiri Flycatcher	*Eumyias albicaudatus*
Grey-headed Bulbul	*Microtarsus priocephalus*
ENDEMIC BIRD AREA 123: WESTERN GHATS	
Nilgiri Wood-pigeon	*Columba elphinstonii*
Malabar Parakeet	*Psittacula columboides*
Malabar Grey Hornbill	*Ocyceros griseus*
Grey-headed Bulbul	*Microtarsus priocephalus*
Wynaad Laughingthrush	*Dryonastes delesserti*
Indian Rufous Babbler	*Turdoides subrufus*
Broad-tailed Grass-warbler	*Schoenicola platyurus*
Nilgiri Flycatcher	*Eumyias albicaudatus*
White-bellied Blue Flycatcher	*Cyornis pallipes*
Black-and-Orange Flycatcher	*Ficedula nigrorufa*
Small Sunbird	*Leptocoma minima*
White-bellied Treepie	*Dendrocitta leucogastra*
BIOME 10: INDIAN PENINSULA TROPICAL MOIST FOREST	
Sri Lanka Frogmouth	*Batrachostomus moniliger*
Jerdon's Nightjar	*Caprimulgus atripennis*
Indian Swiftlet	*Collocalia unicolor*
Malabar Trogon	*Harpactes fasciatus*
Malabar Pied Hornbill	*Anthracoceros coronatus*
White-cheeked Barbet	*Megalaima viridis*
Malabar Barbet	*Psilopogon malabaricus*
Yellow-browed Bulbul	*Acritillas indica*
Malabar Whistling-thrush	*Myophonus horsfieldii*
Indian Scimitar-babbler	*Pomatorhinus horsfieldii*
Dark-fronted Babbler	*Rhopocichla atriceps*
Black-throated Munia	*Lonchura kelaarti*

LAND USE

- Nature conservation and research
- Forestry
- Tourism and recreation

THREATS AND CONSERVATION ISSUES

- Iron ore mining
- Plantation of exotic species
- Anthropogenic impacts of mining personnel

The mining operations for magnetite (iron ore) by the Kudremukh Iron Ore Corporation Limited (KIOCL) in the vicinity was affecting the park severely. Important rivers originating in the area have been silted at many places. Mining operations are being proposed in Nellibeedu and Gangrikal in the core area of the national park, despite an adverse Environment Impact Assessment (EIA) report (Anon. 2001).

A 97 km pipeline was laid between Kudremukh and Mangalore Port 30 years ago, to transport iron slurry. It now appears to have outlived its lifespan, considering the leakages from various points. Repair of the pipeline is low on the agenda of KIOCL, and likely to be undertaken only if the mining lease is extended by another 20 years. In 2000, there

MRUGANK PRABHU

IBAs are Important Bird and Biodiversity Areas, therefore beside birds they also protect the habitats of other biota. *Ghatophryne ornata* (Gunther, 1876), a globally Threatened species of toad, was discovered from Brahmagiri Hills; it also occurs in Kudremukh National Park and Kurichiyarmalai in Wayanad WLS

was a serious leak of iron ore slurry from a KIOCL pipeline passing through Kudremukh NP. The slurry polluted the Yennehole river, the main source of drinking water for 27 villages that are located on its banks. A 12-member study team from the Karnataka Vimochana Ranga, which visited the area to study the impact of the slurry leak, found that the pollution in the river was severe. Thick layers of slurry could be seen floating in the river, making the water completely unfit for consumption. Fish and frogs were badly affected, and have all but vanished from the river.

Plantation of exotic species such as *Eucalyptus* and *Acacia auriculiformis* on the montane grasslands has had an adverse impact on the area's fragile ecosystem, although this has been stopped. A township of miners has contributed to the pollution of the Lakya river.

KEY CONTRIBUTOR

J. Praveen

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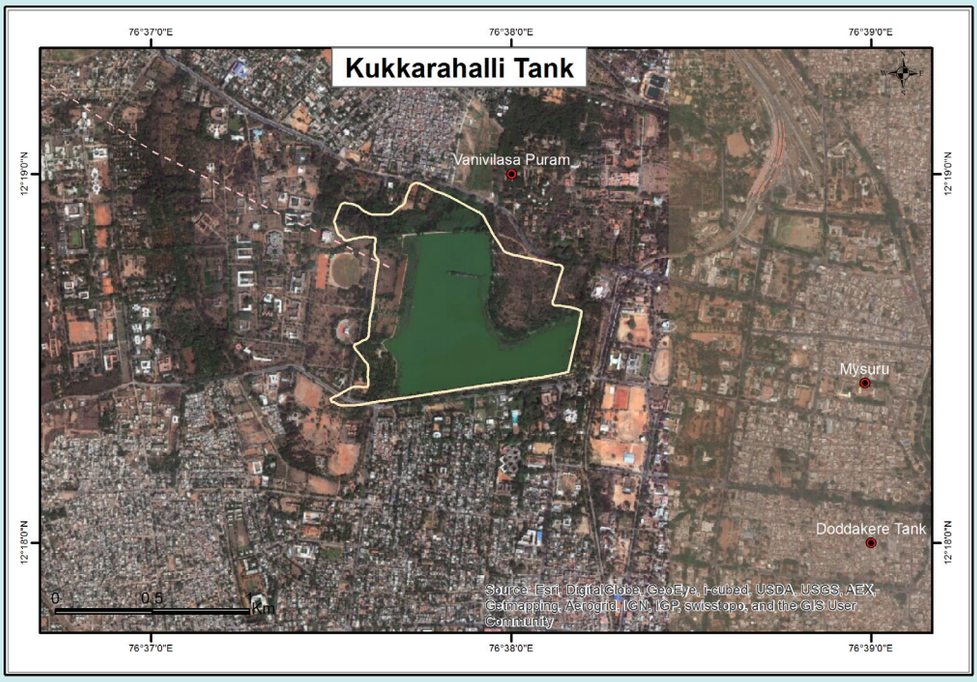
KUKKARAHALLI TANK

IBA Site Code	:	IN-KA-20	**Area**	:	58 ha
Administrative Region (State)	:	Karnataka	**Altitude**	:	760 msl
District	:	Mysore	**Rainfall**	:	770 mm
Coordinates	:	12º 18' 18" N, 76º 32' 60" E	**Temperature**	:	12 ºC to 33 ºC
			Biogeographic Zone	:	Deccan Peninsula
Ownership	:	State	**Habitats**	:	Freshwater Reservoir

IBA CRITERIA: A1 (Threatened species), A3 (Biome 11: Indo-Malayan Tropical Dry Zone)

PROTECTION STATUS: Not officially protected.



GENERAL DESCRIPTION

A picturesque lake located within Mysore city, Kukkarahalli is bordered on two sides by the University of Mysore, on the north by a state highway and to the south by a residential area. It was built by the Maharaja of Mysore in 1864. The lake is presently under the control of Mysore University. Over the years, the vegetation has undergone a significant change, and plantation and woodland have succeeded grassland in the northwestern parts of the land around the lake. A corresponding change in birdlife is seen, with the disappearance of grassland species.

Water ferns *Azolla pinnata*, *A. microphylla*, and *A. filiculoides* are the common pteridophytes found in this IBA, of which the latter two are common in the lake, while *A. pinnata* is the most dominant and ubiquitous species in roadside ponds, pools, and other standing water. The tree species in the lake environs are *Acacia* sp., *Cassia* sp., *Albizia lebbeck*, *Bauhinia* sp., and *Wrightia tinctoria*.

AVIFAUNA

More than 207 species of birds have been recorded from this small lake and the surrounding areas, including the Near Threatened Spot-billed Pelican *Pelecanus philippensis* and Vulnerable Lesser Adjutant *Leptoptilos javanicus* (MAN 1997). The latter is certainly a vagrant to this site.

This site has been selected as an IBA because the Spot-billed Pelican is regularly seen here, sometimes in hundreds. It used to breed here, but breeding was not observed in 2000–2001 (A. Shivaprakash, *pers. comm*. 2002). However, breeding of Spot-billed Pelican was resumed in 2002–2003 (T. Shivanand, *pers. comm*. 2003).

Three species of cormorants, Little *Phalacrocorax niger*,

ENDANGERED	
Black-bellied Tern	*Sterna acuticauda*
VULNERABLE	
Lesser Adjutant (stray)	*Leptopt2ilos javanicus*
NEAR THREATENED	
Oriental Darter	*Anhinga melanogaster*
Spot-billed Pelican	*Pelecanus philippensis*
Painted Stork	*Mycteria leucocephala*
Black-headed Ibis	*Threskiornis melanocephalus*
Eurasian Curlew	*Numenius arquata*
BIOME 11: INDO-MALAYAN TROPICAL DRY ZONE	
Common Indian Nightjar	*Caprimulgus asiaticus*
Indian Grey Hornbill	*Ocyceros birostris*
Ashy-crowned Sparrow-lark	*Eremopterix grisea*
Sykes's Crested Lark	*Galerida deva*
Black-headed Cuckooshrike	*Coracina melanoptera*
White-browed Bulbul	*Pycnonotus luteolus*
White-headed Babbler	*Turdoides affinis*
Ashy Prinia	*Prinia socialis*
White-browed Fantail	*Rhipidura aureola*
Brahminy Starling	*Sturnus pagodarum*
White-bellied Drongo	*Dicrurus caerulescens*

Indian *P. fuscicollis*, and Great Cormorant *P. carbo*, and Oriental Darter *Anhinga melanogaster* breed in the same areas as the pelicans. About 50 species of birds breed in and around this lake (MAN 1997). Once the lake is restored with natural vegetation and gradual contours on the edge to create different ecological niches, it is likely to attract more than 20,000 birds. The Endangered Black-bellied Tern *Sterna acuticauda* has been reported.

There is an interesting record of the Great White Pelican *Pelecanus onocrotalus* by Sapthagirish & Kumara (2013), which may be a stray record. This bird is mainly found in northwest and northeast India.

There are many Biome 11 species, but none of them are presently of much conservation concern.

This site is selected as an IBA chiefly due to the breeding of Spot-billed Pelican, and the great potential to develop the lake area as a bird refuge.

OTHER KEY FAUNA

As the tank is inside Mysore town, no large wild mammal is found here. Commercial fish, including introduced *Tilapia*, are farmed here.

LAND USE

- Fisheries and aquaculture
- Tourism and recreation

THREATS AND CONSERVATION ISSUES

- Fisheries and aquaculture
- Drainage
- Afforestation
- Reclamation of wetland
- Tourism
- Disturbance to birds

The lake lost a large area to reclamation efforts in the 1970s. Continuous clearing of shrubs and other vegetation after the rains needs to be stopped, as the Indian Pitta *Pitta brachyura* and Blue-capped Rock-thrush *Monticola cinclorhynchus* are less frequently seen because of this, so also the Oriental Scops-owl *Otus sunia* and Jungle Nightjar *Caprimulgus indicus* (T. Shivanand, *pers. comm.* 2003).

Pollution is the biggest problem in this IBA. In August 2000, nearly 100,000 fish died due to pollution from sewage and the resultant depletion of oxygen. Sewage water that flowed into the lake for more than 20 years was diverted after a public outcry. A project under the ongoing Asian Development Bank funded Karnataka Urban Infrastructure Development Project was recently initiated to restore the lake and to prevent pollution. Under the project, all weeds in the waterspread of the lake are to be removed, desilting done in highly silted zones, and earthen bunds formed. Since the lake was being polluted by inflow of sewage from residential areas, the construction of a pipeline has been proposed to take away the sewage. Restoration of the Kukkarahalli Tank would certainly benefit birdlife, but the State Government is also keen to develop the tank as a tourist spot with boating facilities, restaurants, and parking lot. This needs to be stopped.

In 2013, the Karnataka government announced that the lake would be revived. A recent study by the Karnataka State Pollution Control Board (KSPCB) revealed that Kukkarahalli lake water is unfit for bathing. The KSPCB had ranked the lake as 'D', which means that water can be used by animals for drinking, bird nesting, and fish breeding, but is unfit for drinking even after conventional treatment. It is estimated that sewage is entering the lake at a little over a million litres per day from the Paduvarhalli side. While other development works like improving the bund are taken up, diversion of sewage to the underground drainage located close by is not being done.

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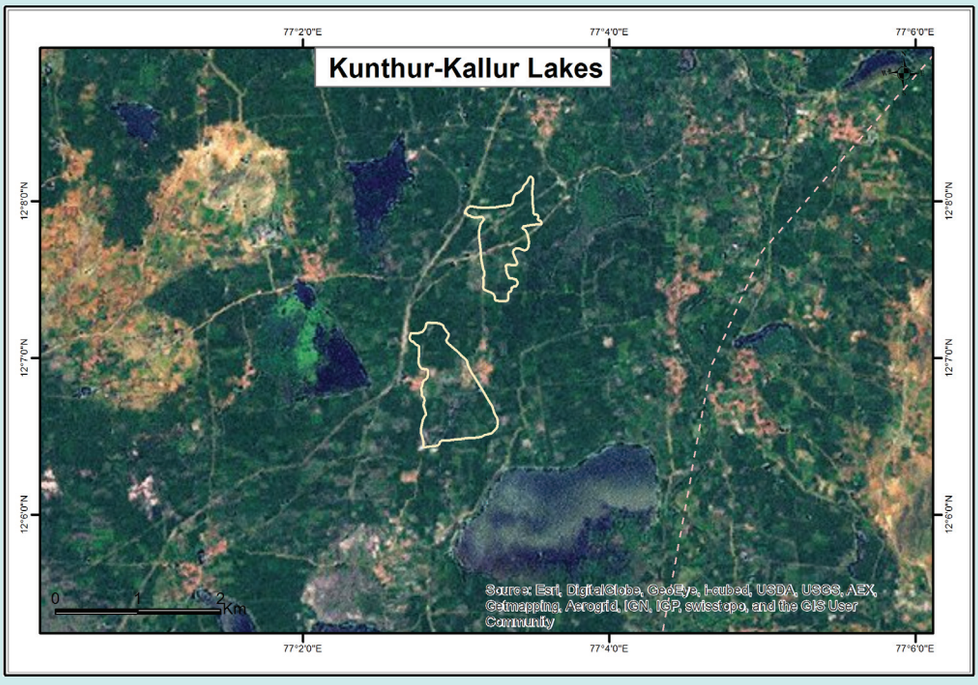
KUNTHUR-KALLUR LAKES

IBA Site Code	: IN-KA-21	**Area**	: 460 ha
Administrative Region (State)	: Karnataka	**Altitude**	: 600 msl
District	: Chamarajanagar	**Rainfall**	: 600 mm
Coordinates	: 12° 08' 00" N, 77° 01' 55" E	**Temperature**	: 13 °C to 40 °C
		Biogeographic Zone	: Deccan Peninsula
Ownership	: State	**Habitats**	: Freshwater Reservoir

IBA CRITERIA: A1 (Threatened species), A4i (≥1% of biogeographic population), A4iii (≥20,000 waterbirds)

PROTECTION STATUS: Not officially protected.



GENERAL DESCRIPTION

These two lakes are situated about half a kilometre apart on National Highway 209, 20 km from Kollegal town in Chamarajanagar district of southern Karnataka. Kunthur Lake is overgrown with waterlily, *Typha*, and *Ipomoea carnea*, while Kallur Lake is relatively free of emergent vegetation, but has good submerged vegetation.

Ducks such as Ruddy Shelduck *Tadorna ferruginea* and Knob-billed Duck *Sarkidiornis melanotos* prefer Kunthur, while others such as Garganey *Querquedula querquedula*, Northern Pintail *Mareca acuta*, and Wigeon *Anas penelope* favour Kallur Lake.

The *Typha* reedbeds in Kunthur attract bitterns and crakes, while the waters of Kallur regularly support Black-bellied Tern *Sterna acuticauda*. Kunthur also attracts huge flocks of Whiskered Tern *Chlidonias hybridus*, up to 2,500 on one occasion, and rare visitors like the Caspian Tern *Sterna caspia* and White-winged Tern *Chlidonias leucopterus*.

The importance of the lakes as a wintering ground for the Endangered Black-bellied Tern *Sterna acuticauda* cannot be overestimated, as they are very close to a substantial breeding colony of the species at Talakad on the banks of the Kaveri river, a few kilometres north of the lakes (T. Shivanand, *in litt*. 2003).

Islam & Rahmani (2008) have suggested Kunthur-Kallur Lakes as a Ramsar Site, as they qualify for Ramsar Criteria 2 (wetland supports threatened ecological communities), Criteria 4 (wetland provides refuge during adverse conditions to threatened species), Criteria 5 (wetland regularly supports ≥20,000 waterbirds), and Criteria 6 (wetlands regularly supports 1% of the individuals in a population of one species or subspecies). According to the

CRITICALLY ENDANGERED	
White-rumped Vulture (old record)	*Gyps bengalensis*
ENDANGERED	
Black-bellied Tern	*Sterna acuticauda*
VULNERABLE	
Greater Spotted Eagle	*Clanga clanga*
NEAR THREATENED	
Oriental Darter	*Anhinga melanogaster*
Spot-billed Pelican	*Pelecanus philippensis*
Painted Stork	*Mycteria leucocephala*
Black-headed Ibis	*Threskiornis melanocephalus*
Eurasian Curlew	*Numenius arquata*
Black-tailed Godwit	*Limosa limosa*
River Tern	*Sterna aurantia*

Ramsar Wetland Types, these lakes come under Type O (permanent freshwater lakes).

AVIFAUNA

About 215 species of birds have been recorded at these lakes (A. Shivaprakash, *pers. comm*. 2014).

The site is important for congregations of winter migrants, especially ducks and waders. Over the past 12 years, the lakes have recorded huge congregations of migratory ducks and waders, often crossing the 20,000 mark. The number of birds recorded crossed 35,000, and touched 55,000 in the year 2000. Thresholds for 1% biogeographic population of species were crossed by Garganey (total 16,900; 1% threshold 3,500) and Black-tailed Godwit *Limosa limosa* (total 6,200; threshold 1,500). The 1% biogeographic population thresholds are taken from Wetlands International (2012).

These waterbodies are also the winter home of two to three individuals of the globally Threatened Greater Spotted Eagle *Clanga clanga*.

Species like the White-bellied Sea-eagle *Haliaeetus leucogaster*, White Stork *Ciconia ciconia*, flocks of Greater Short-toed Lark *Calandrella brachydactyla*, Citrine Wagtail *Matocilla citreola*, Gadwall *Anas strepera*, Ruddy Shelduck *Tadorna ferruginea,* and others can be seen at the lakes (A. Shivaprakash *pers. comm.*).

OTHER KEY FAUNA

No information available.

LAND USE

- Irrigation
- Cultivation

THREATS AND CONSERVATION ISSUES

- Poaching
- Spread of weeds

KISHEN DAS

The reed beds and emergent vegetation attract bitterns, crakes, rails, and other shy birds

- Poor maintenance
- Inflow of influents

Kunthur Lake faces the twin threats of siltation and overgrowth of *Ipomoea carnea* that has choked several important lakes in the region and rendered them unproductive. Fortunately, this weed has been cleared in recent years.

The 1.5 km long, black soil bund of Kunthur Lake is cracking up at many places due to the unchecked growth of *Prosopis* shrubs that can reach the size of small trees, thus endangering the existence of the wetland. All pleas by birdwatchers and local people from Kunthur village to initiate immediate action have failed to elicit a response from the authorities.

Poaching remains a problem, as these lakes are famed for their waterfowl all over the region. Ducks from Kunthur Lake used to be supplied to the royal kitchens of the Mysore Palace (T. Shivanand, *in litt*. 2003).

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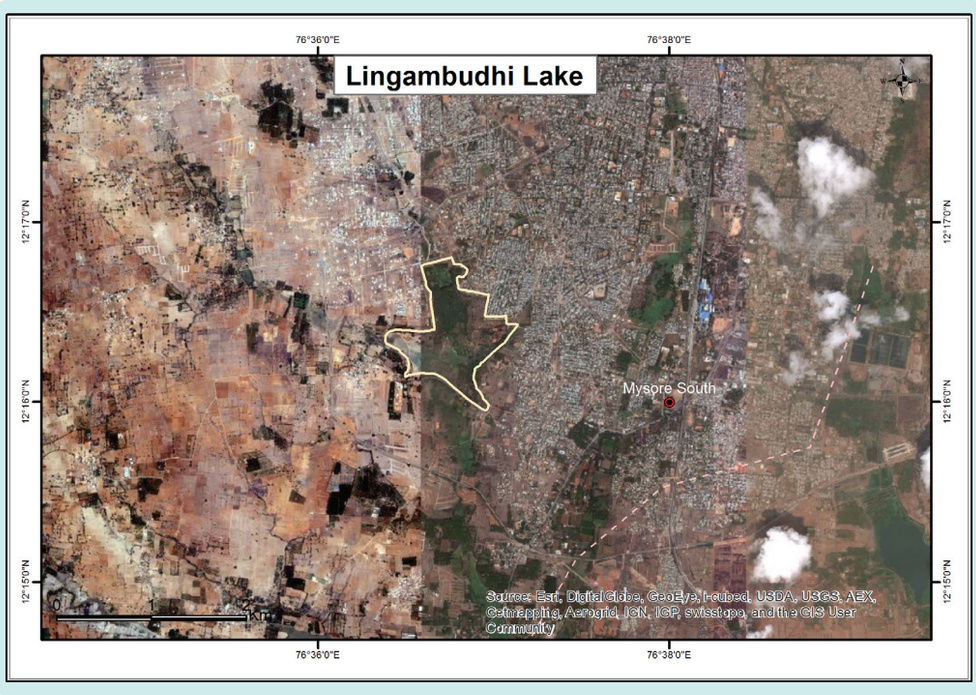
LINGAMBUDHI LAKE

IBA Site Code	:	IN-KA-22	**Altitude**	:	780 msl
Administrative Region (State)	:	Karnataka	**Rainfall**	:	750 mm
District	:	Mysore	**Temperature**	:	15 °C to 34 °C
Coordinates	:	12º 16' 20" N, 76º 37' 00" E	**Biogeographic Zone**	:	Deccan Peninsula
Ownership	:	State	**Habitats**	:	Freshwater Reservoir, Tropical Secondary Scrub, Dry Deciduous Forest (Woodland)
Area	:	76 ha			

IBA CRITERIA: A1 (Threatened species), A4i (≥1% biogeographic population threshold), A4iii (≥20,000 waterbirds)

PROTECTION STATUS: Not officially protected.



GENERAL DESCRIPTION

This small lake has a variety of habitats which sustain vibrant birdlife – wetlands, including the lake and adjacent paddyfields, mudflats and drains, open dry land, scrub forest, *Sesbania* and *Acacia* plantations, grassland, bamboo groves, mango and coconut groves, and orchards. Lingambudhi Lake was established in 1828 by Krishnaraja Wodeyar, ruler of the erstwhile state of Mysore, in memory of his wife.

A farm of medicinal plants has been set up in the Forest Department land surrounding the lake, which includes part of the wetland.

Islam & Rahmani (2008) suggested Lingambudhi Lake as a Ramsar Site as it qualifies for Ramsar Criteria 2 (wetland supports threatened ecological communities), Criteria 4 (wetland provides refuge during adverse conditions to threatened species), Criteria 5 (wetland regularly supports ≥20,000 waterbirds), and Criteria 6 (wetland regularly supports 1% of the individuals in a population of one species or subspecies). According to the Ramsar Wetland types, these lakes come under Type O (permanent freshwater lakes).

AVIFAUNA

The birdlife of Lingambudhi Lake has been studied for well over two decades, and intensive daily birdwatching for the past 15 years indicates the presence of 235 species in less than 250 ha (Shivaprakash 2001, 2005; Thejaswi and Shivaprakash 2004a,b,c; Thejaswi *et al.* 2002). The lake, when full, occasionally hosts a mixed nesting colony of Cormorants *Phalacrocorax* spp., Oriental Darter *Anhinga melanogaster*, and Grey Heron *Ardea cinerea*.

ASAD R. RAHMANI

More than 235 species of birds have been identified from Lingambudhi Lake and Environs, including nearly 20 wader species

The lake is an important staging ground for migratory waders of nearly 20 species. It hosts over 5,000 waders during the spring migration and over 1,000 in the autumn migration.

Breeding activity of pelicans, spoonbills, ibises, Grey Heron, and cormorants was recorded here for two consecutive years, 2000 and 2001. The lake hosts a large number of Near Threatened Spot-billed Pelican *Pelecanus philippensis* every summer, when other lakes dry up. In March-April, 2002, nearly 600 birds of this species, whose world population is estimated by Wetlands International (2012) between 2,500 to 5,000, and the threshold for 1% of biogeographic population set at 100, making it an extremely important site for the species in southern India and qualifying it as an IBA under criteria A4i.

Shivaprakash (2005) has reported breeding of Indian Spotted Eagle *Clanga hastata* from this IBA.

Praveen (2007) mentions that a single Thick-billed Green-pigeon *Treron curvirostra* was spotted at Lingambudhi Lake on September 20, 2007. This is a resident bird of the Himalaya and north-eastern India, but it has been observed as far south as Satkosia Gorge Tiger Reserve, Odisha (Singh 2010). This bird in Mysore is most likely a cage escapee (S. Subramanya, *in litt*. 2014).

Earlier, White-rumped Vulture *Gyps bengalensis* was found in this area, but during the last 10 years there is no record.

ENDANGERED	
Egyptian Vulture	*Neophron percnopterus*
VULNERABLE	
Indian Spotted Eagle	*Clanga hastata*
Greater Spotted Eagle	*Clanga clanga*
Asian Woollyneck	*Ciconia episcopus*
NEAR THREATENED	
Oriental Darter	*Anhinga melanogaster*
Spot-billed Pelican	*Pelecanus philippensis*
Painted Stork	*Mycteria leucocephala*
Black-headed Ibis	*Threskiornis melanocephalus*
Eurasian Curlew	*Numenius arquata*
River Tern	*Sterna aurantia*
Red-headed Falcon	*Falco chicquera*

OTHER KEY FAUNA

No large wild mammal of any conservation concern is found here. This IBA, which is only partially protected, has *c.* 110 species of butterflies. Studies over a decade have resulted in the observation of 107 species of butterflies, representing five families. Occasionally, rare butterflies like Chestnut-streaked Sailer *Neptis jumbah*, Gaudy Baron *Euthalia lubentina*, and Peacock Royal *Tajuria cippus* have been recorded.

LAND USE

- Fisheries, aquaculture
- Forestry, plantations

A. SHIVA PRAKASH

There has been popular demand by the local people to convert the historic Lingambudhi Lake into a bird sanctuary

- Agriculture, grass cultivation, medicinal plant farming
- Tourism and recreation
- Nature conservation and research

THREATS AND CONSERVATION ISSUES

- Afforestation has led to growth of tropical secondary scrub/dry deciduous forest, attracting arboreal bird species, at the same time driving away ground birds. But the effect of monoculture is yet to be seen after sufficient growth
- Encroachment, debris dumping: once rampant, now controlled
- Fisheries, aquaculture
- Draining of the lake
- Invasive species
- Firewood collection
- Disturbance to birds: Increased human activity in the morning and evening (walkers and joggers used to disturbs foraging ducks on the lakeshore, now controlled
- Siltation
- Livestock grazing
- Encroachment by grass (fodder) cultivators

The site has been the symbol of a people's movement to save the lakes of Mysore city from degradation (Manjunath 2007). As a result, a portion of the lake has been accorded the status of a protected area, with a proposal pending before the State Government to convert it into a bird sanctuary.

There was a plan to construct a ring road cutting across the lake a few years ago, but the road was realigned after strong opposition from local residents, birdwatchers, environmentalists and concerned citizens.

In 2001, the flow of sewage into the lake was stopped, though not completely. The issue of immersion of Ganesh idols during the Ganesh festival, which was a nuisance due to the sheer numbers of idols being immersed, was finally resolved after the Deputy Commissioner (District Collector) of Mysore finally banned it in 2003.

Illegal encroachments by grass cultivators urgently need to be removed.

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Link

http://www.mysorenature.org/lingambudhi

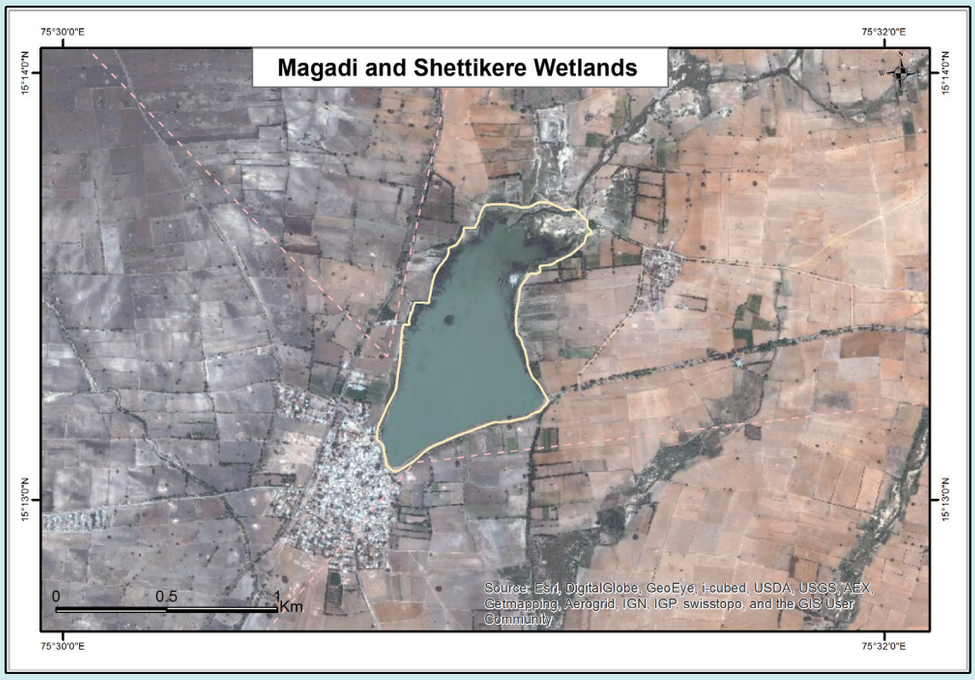
MAGADI & SHETTIKERE WETLANDS

IN-KA-23

IBA Site Code	: IN-KA-23	**Area**	: 190 ha
Administrative Region (State)	: Karnataka	**Altitude**	: 600 msl
District	: Gadag	**Rainfall**	: 680 mm
Coordinates	: 15º 13' 60" N, 75º 31' 00" E	**Temperature**	: 16 °C to 37 °C
Ownership	: State	**Biogeographic Zone**	: Deccan Peninsula
		Habitats	: Freshwater Reservoir

IBA CRITERIA: A1 (Threatened species), A4iii (≥20,000 waterbirds)

PROTECTION STATUS: Not officially protected.



GENERAL DESCRIPTION

Magadi (70 ha) wetland is a tank situated on the Gadag-Laxmeshwar road in Shirahatti *taluk* in Gadag district. The 120 ha Shettikere wetland is *c.* 12 km from Magadi wetland. The tank can be reached from Shirahatti, 4 km away. The water of both the wetlands is brackish (pH *c.* 9.2), and unsuitable for irrigation. Therefore, these wetlands hold water even in drought years, and attract migratory waterfowl. The water level is fairly stable, except for evaporation loss.

Important tree and shrub species present in the environs of these wetlands are *Acacia nilotica*, *Phoenix sylvestris*, *Ziziphus jujuba*, and *Prosopis chilensis*. Important aquatic vegetation of the wetlands comprises emergent plants such as *Ipomoea carnea*, *Typha angustifolia*, *Paspalum distichum*, *Cyperus rotundus*, *Cyperus bulbosus*, and *Cynodon dactylon*, among others.

Islam & Rahmani (2008) suggested Magadi and Shettikere wetlands as a potential Ramsar Site as they qualify for Ramsar Criteria 2 (wetland supports threatened ecological communities), Criteria 5 (wetland regularly supports 20,000 or more waterbirds), and Criteria 6 (wetland regularly supports 1% of the individuals in a population of one species or subspecies). These wetlands are classified as Ramsar Wetland Type 6 (water storage impoundment).

AVIFAUNA

Magadi wetland attracts a huge number of migratory waterfowl. Notable among them is the Bar-headed Goose *Anser indicus*. Nearly 5,000 birds visit the tank during winter, and it is one of the largest known wintering grounds in southern India for this species. According to the latest population estimates of waterbirds prepared by Wetlands International (2012), the total population of Bar-headed

Goose is between 52,000 to 60,000, and 1% population threshold is 560. This site contains *c.* 10% of the Bar-headed Goose population of South Asia! This itself is a good reason to treat it as an IBA.

Apart from wintering migratory waterfowl, the tank is also home to the Greater Flamingo *Phoenicopterus roseus*, Spot-billed Duck *Anas poecilorhyncha*, Painted Stork *Mycteria leucocephala*, Purple Moorhen or Swamphen *Porphyrio porphyrio*, and the Common Coot *Fulica atra*. Nearly 135 species of birds have been recorded near the tank.

Shettikere wetland harbours the same birds as Magadi, but in addition large numbers of Demoiselle Crane *Grus virgo* (>4,000) visit the tank in good years, like the winter of 2002–2003. This is 4% of the total wintering population of the Demoiselle Crane in South Asia, as according to Wetlands International (2012) there could be 100,000 Demoiselle Crane wintering in the Indian subcontinent. These wetlands also have nine Near Threatened species.

A neck-collared Bar-headed Goose *Anser indicus* bearing number C-9 was photographed here on February 9, 2008 by Madhukar *et al*. (2009).

ENDANGERED	
Egyptian Vulture	*Neophron percnopterus*
VULNERABLE	
Asian Woollyneck	*Ciconia episcopus*
NEAR THREATENED	
Spot-billed Pelican	*Pelecanus philippensis*
Oriental Darter	*Anhinga melanogaster*
Painted Stork	*Mycteria leucocephala*
Black-headed Ibis	*Threskiornis melanocephalus*
Pallid Harrier	*Circus macrourus*
Red-headed Falcon	*Falco chicquera*
River Tern	*Sterna acuticauda*
Great Thick-knee	*Esacus recurvirostris*
Alexandrine Parakeet	*Psittacula eupatria*

OTHER KEY FAUNA

As these wetlands are surrounded by agricultural fields and villages, no large mammal of conservation concern is found. Smaller mammals such as Indian Fox *Vulpes vulpes*, Golden Jackal *Canis aureus*, Jungle Cat *Felis chaus*, and Indian Pangolin *Manis crassicaudata* could be seen, but they are present in many other areas.

LAND USE

- Grazing
- Fishing
- Cultivation around the wetlands

THREATS AND CONSERVATION ISSUES

- Grazing
- Encroachment
- Pesticides

The threats are primarily from the village cattle, to some extent encroachment, and non-regulation of the fishing season. A long-term threat would be the use of pesticides in the catchment area.

Both the wetlands are small, but attract huge numbers of migratory waterfowl. Presently, they have no official protection, but the State Forest Department monitors these wetlands during the migration season. Presently, the Karnataka Forest Department ensures that no fishing takes place when the migratory birds are around. However, in order to ensure continued protection, a formal declaration of the area as a protected area is essential. Fortunately, the residents of Magadi village, which is adjacent to the tank, are interested in protecting the avifauna. A Village Forest Committee for Eco-tourism is already in existence. Its activities need to be strengthened, and a similar initiative should be taken up at Shettikere wetland.

Documentation of the biodiversity is presently being done by the Forest Department.

KEY CONTRIBUTOR

Vijay Mohan Raj

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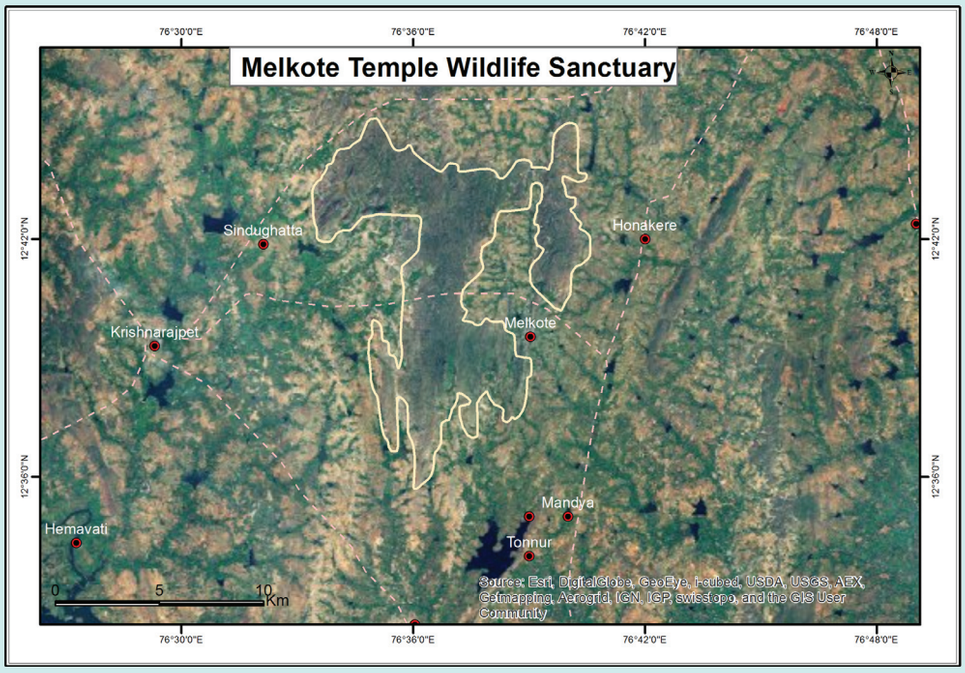
MELKOTE TEMPLE WILDLIFE SANCTUARY

IN-KA-24

IBA Site Code	: IN-KA-24	**Area**	: 4,982 ha
Administrative Region (State)	: Karnataka	**Altitude**	: 880–1,127 msl
District	: Mandya	**Rainfall**	: 700 mm
Coordinates	: 12° 42’ 33” N, 76° 38’ 11” E	**Temperature**	: 17 °C to 38 °C
Ownership	: State	**Biogeographic Zone**	: Deccan Peninsula
		Habitats	: Tropical Secondary Scrub

IBA CRITERIA: A1 (Threatened species), A2 (Secondary Area s072: Southern Deccan Plateau)

PROTECTION STATUS: Wildlife Sanctuary, established June, 1974.



GENERAL DESCRIPTION

Situated in Mandya district, north of Mysore, this sanctuary was declared on June 17, 1974 specifically to protect the Grey Wolf *Canis lupus pallipes*. It has been named after the Melkote Yoganarasimhaswami Temple, a famous pilgrimage centre nearby, which is one of the holiest of Srivaishnava shrines and provided shelter to the great Vaishnava scholar Ramanujacharya.

The sanctuary can be approached by rail or road from Bengaluru (=Bangalore) to Mandya (100 km), then by road to the sanctuary (another 35 km). It is a trekker’s delight.

The sanctuary is divided into two blocks, Mudibetta (448 ha) and Narayanadurga (4,534 ha). Between the two blocks, a number of villages and cultivated land are present. The landscape is rocky, with dry deciduous and scrub vegetation (Manjrekar 2000).

Cycas circinalis, an endangered gymnosperm, is characteristic of this area (Manjrekar 2000). Once abundant, *Cycas circinalis* (now updated as a new species *C. swamyi*) is facing extinction from excessive use by flower decorators and local village doctors. A few patches of *Shorea talura* exist. Other tree species include *Acacia leucophloea*, *Anogeissus latifolia*, *Ailanthus triphysa*, *Albizia* sp., *Azadirachta indica*, *Dalbergia* sp., *Santalum album*, and *Ziziphus* sp. (Manjrekar 2000). *Shorea roxburghii* exists sporadically within the sanctuary around Narayanadurga hillock. Important tree species recorded here are *Terminalia chebula*, *Chloroxylon swietenia*, *Anogeissus latifolia*, *Santalum album*, and *Memecylon* spp.

The forest is the catchment area of Thonnur Lake, one of the largest and deepest perennial irrigation tanks in the area.

CRITICALLY ENDANGERED	
White-rumped Vulture (old records)	*Gyps bengalensis*
Long-billed Vulture (old records)	*Gyps indicus*
ENDANGERED	
Egyptian Vulture (old records)	*Neophron percnopterus*
VULNERABLE	
Indian Spotted Eagle	*Clanga hastata*
Greater Spotted Eagle	*Clanga clanga*
Asian Woollyneck	*Ciconia episcopus*
Yellow-throated Bulbul	*Pycnonotus xantholaemus*
NEAR THREATENED	
Spot-billed Pelican	*Pelecanus philippensis*
Oriental Darter	*Anhinga melanogaster*
Painted Stork	*Mycteria leucocephala*
Black-headed Ibis	*Threskiornis melanocephalus*
Red-headed Falcon	*Falco chicquera*
Great Thick-knee	*Esacus recurvirostris*
River Tern	*Sterna aurantia*
SECONDARY AREA S072: SOUTHERN DECCAN PLATEAU	
Yellow-throated Bulbul	*Pycnonotus xantholaemus*

AVIFAUNA

According to www.mysorenature.org (2014), 199 species of birds have been seen by various birdwatchers. Earlier, White-rumped *Gyps bengalensis* and Long-billed *G. indicus* Vultures were often seen, and in 2007 a soiled egg and abandoned nest of Long-billed Vulture was recorded. These birds are now rarely reported. Similarly, Egyptian Vulture *Neophron percnopterus* has also become uncommon.

The birdlife of Narayanadurga is generally characteristic of dry scrub forest, the signature species being the Yellow-throated Bulbul *Pycnonotus xantholaemus.* T. Shivanand counted between 28 to 35 individuals within half an hour, over a distance of 0.5 km.

This site was mainly selected on the basis of the presence of a good population of Vulnerable Yellow-throated Bulbul.

OTHER KEY FAUNA

Besides the Grey Wolf *Canis lupus pallipes*, carnivores include Leopard *Panthera pardus*, Jungle Cat *Felis chaus*, and Red Fox *Vulpes vulpes*. Cheetal *Axis axis* and Wild Boar *Sus scrofa* are their main natural prey. About 110 species of butterflies have been recorded in the sanctuary area. Bamboo Pit Viper *Trimeresurus gramineus* has also been recorded.

LAND USE

- Settlements
- Cultivation
- Transportation

THREATS AND CONSERVATION ISSUES

- Overgrazing
- Illegal mining
- Encroachment
- Wood cutting and firewood collection

Grazing of livestock, leading to soil erosion, is the major problem. There is no village inside the sanctuary, but the surrounding area is heavily populated by humans and livestock. Grey Wolf, Striped Hyaena, and Leopard attack the livestock, resulting in much resentment among farmers. There is practically no management in the sanctuary, which has only two forest guards looking after 50 sq. km of highly disturbed area. Blackbuck *Antilope cervicapra*, the main natural prey of the Grey Wolf *Canis lupus*, has disappeared from the area.

Encroachment by marginal and large farmers is rampant. Scrub forest, on which the Yellow-throated Bulbul depends, has been thinned down at several places. Illegal quarrying occurs in the sanctuary.

Despite the fact that the forest is the catchment area of Thonnur irrigation tank, there does not appear to be any concern among the authorities or local communities to protect the forest.

KEY CONTRIBUTORS

IBA Team, Adavanne Shivaprakash, S. Subramanya.

KEY REFERENCE

Manjrekar, N. (Ed.) (2000) *A Walk on the Wild Side*. Karnataka Forest Department, Wildlife Wing, Bangalore.

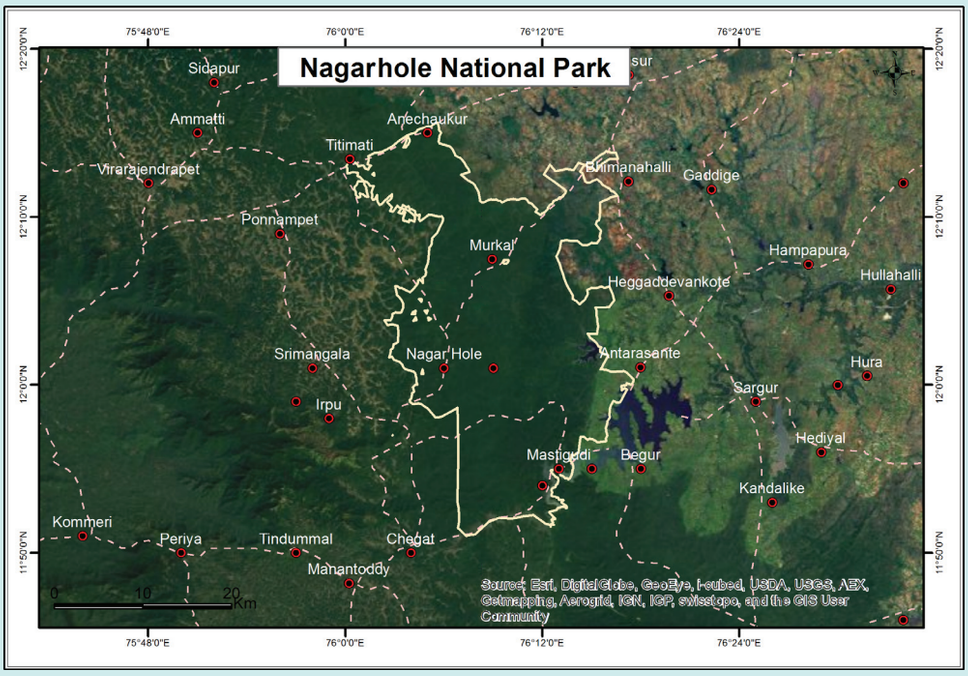
NAGARHOLE NATIONAL PARK

IN-KA-25

IBA Site Code	: IN-KA-25	**Altitude**	: 701–959 msl
Administrative Region (State)	: Karnataka	**Rainfall**	: 1,778 mm
District	: Mysore, Kodagu	**Temperature**	: 14 ºC to 33 ºC
Coordinates	: 12º 01' 03" N, 76° 08' 56" E	**Biogeographic Zone**	: Western Ghats
Ownership	: State	**Habitats**	: Tropical Moist Deciduous Forest, Tropical Dry Deciduous Forest
Area	: 64,339 ha		

IBA CRITERIA: A1 (Threatened species), A2 (Endemic Bird Area 123: Western Ghats), A3 (Biome 10: Indian Peninsula Tropical Moist Forest, Biome 11: Indo-Malayan Tropical Dry Zone)

PROTECTION STATUS: National Park, established December, 1974. Declared 37th Project Tiger Reserve, 1999. Part of Nilgiri Biosphere Reserve.



GENERAL DESCRIPTION

Situated in the southeastern part of Kodagu (Coorg) and southwestern part of Mysore district, Nagarhole NP borders Kerala state, with Mysore city *c*. 50 km to its northeast. The southern border is contiguous with the reservoir of Kabini Dam. The southeastern boundary follows the state border, while the western border runs along the Mysore-Mangalore highway. The northern boundary extends along this road to just south of Hunsur and the eastern boundary runs from this point south to the Kabini Reservoir. The Brahmagiri Hills lie west of the national park.

Nagarhole forms part of the Nilgiri Biosphere Reserve, and together with Bandipur Tiger Reserve (87,500 ha) and Mudumalai National Park (32,500 ha) on the southeast and the Wayanad Wildlife Sanctuary (35,000 ha) on the southwest, forms one of the largest protected forest tracts in peninsular India.

There are two main types of vegetation: Moist Deciduous Forest in the northern and western parts of the IBA, and Dry Deciduous Forest in the southeastern part.

The Moist Deciduous Forests are tall and dense, with a two-storey canopy. The upper storey, at approximately 30 m, is dominated by *Terminalia tomentosa*, *Lagerstroemia lanceolata*, *Pterocarpus marsupium*, *Grewia tilaefolia*, *Dalbergia latifolia*, and *Tectona grandis*. The lower storey has the prolific fruit bearers *Phyllanthus emblica*, *Dillenia pentagyna*, and *Randia* sp. The shrub layer is usually very dense and varied in composition. A unique feature of these forests is the open grassy swamps, locally called *hadlu*s, where the grass is lush all the year round.

In the Dry Deciduous Forest, the canopy is lower and trees are more widely spaced. A second canopy is barely discernible. Many moist forest trees are also present: *Anogeissus latifolia* is usually the commonest; *Cassia fistula*, *Butea monosperma*, and *Dendrocalamus strictus* are all common. Patches of open grassland are present (Karanth 1983, Israel & Sinclair 1987). Bamboo flowering occurs every 40–50 years (Seshadri 1986). Much of the park is covered with plantations of Teak and *Eucalyptus* spp. (Nair *et al*. 1978).

AVIFAUNA

More than 270 species of birds are present (Anon. 1987), including Malabar Trogon *Harpactes fasciatus* and Malabar Pied Hornbill *Anthracoceros coronatus*. Andheria (1999) has listed 130 species based on his two visits. He reports the Vulnerable Nilgiri Wood-pigeon *Columba elphinstonii*, and many species listed by BirdLife International (2001) as Near Threatened. The Lesser Adjutant *Leptoptilos javanicus* is regularly sighted in this park (Andheria 1999) and probably breeds there. During winter, the Black Stork *Ciconia nigra* is occasionally seen. Oriental Darter *Anhinga melanogaster* and Large Cormorant *Phalocrocorax carbo* are known to nest on partially submerged dead tree-trunks in the Kabini backwaters, but in small numbers.

According to eBirds website (2014), 235 species of birds have been reported by participants from this IBA.

DHRITIMAN MUKHERJEE

Jerdon's Nightjar *Caprimulgus atripennis* is an endemic bird of southern India and Sri Lanka. Like most nightjars, it is easily identified through its characteristic call

CRITICALLY ENDANGERED	
White-rumped Vulture	*Gyps bengalensis*
Long-billed Vulture	*Gyps indicus*
Red-headed Vulture	*Aegypius calvus*
ENDANGERED	
Egyptian Vulture	*Neophron percnopterus*
Black-bellied Tern	*Sterna acuticauda*
VULNERABLE	
Lesser Adjutant	*Leptoptilos javanicus*
Asian Woollyneck	*Ciconia episcopus*
Greater Spotted Eagle	*Clanga clanga*
Indian Spotted Eagle	*Clanga hastata*
Nilgiri Wood-pigeon	*Columba elphinstonii*
NEAR THREATENED	
Oriental Darter	*Anhinga melanogaster*
Painted Stork	*Mycteria leucocephala*
Black-headed Ibis	*Threskiornis melanocephalus*
Grey-headed Fish-eagle	*Ichthyophaga ichthyaetus*
Red-headed Falcon	*Falco chicquera*
River Tern	*Sterna aurantia*
Great Thick-knee	*Esacus recurvirostris*
Alexandrine Parakeet (feral population)	*Psittacula eupatria*
ENDEMIC BIRD AREA 123: WESTERN GHATS	
Nilgiri Wood-pigeon	*Columba elphinstonii*
Malabar Parakeet	*Psittacula columboides*
Malabar Grey Hornbill	*Ocyceros griseus*
Indian Rufous Babbler	*Turdoides subrufa*
White-bellied Treepie	*Dendrocitta leucogastra*
BIOME 10: INDIAN PENINSULA TROPICAL MOIST FOREST	
Blue-faced Malkoha	*Phaenicophaeus viridirostris*
Jerdon's Nightjar	*Caprimulgus atripennis*
White-cheeked Barbet	*Megalaima viridis*
Yellow-browed Bulbul	*Acritillas indica*
Malabar Whistling-thrush	*Myophonus horsfieldii*
Indian Scimitar-babbler	*Pomatorhinus horsfieldii*
Loten's Sunbird	*Cinnyris lotenia*
BIOME 11: INDO-MALAYAN TROPICAL DRY ZONE	
Red-headed Vulture	*Aegypius calvus*
Painted Bush-quail	*Perdicula erythrorhyncha*
Indian Peafowl	*Pavo cristatus*
Yellow-legged Green-pigeon	*Treron phoenicoptera*
Plum-headed Parakeet	*Psittacula cyanocephala*
Sirkeer Malkoha	*Phaenicophaeus leschenaultii*
Indian Grey Hornbill	*Ocyceros birostris*
Yellow-fronted Pied Woodpecker	*Dendrocopos mahrattensis*
Black-rumped Flameback	*Dinopium benghalense*
Black-headed Cuckooshrike	*Coracina melanoptera*
Small Minivet	*Pericrocotus cinnamomeus*
Common Woodshrike	*Tephrodornis pondicerianus*
White-browed Bulbul	*Pycnonotus luteolus*
Indian Robin	*Saxicoloides fulicata*
Rufous-bellied Babbler	*Dumetia hyperythra*
Jungle Babbler	*Turdoides striatus*
Ashy Prinia	*Prinia socialis*
White-browed Fantail	*Rhipidura aureola*
Brahminy Starling	*Sturnus pagodarum*
White-bellied Drongo	*Dicrurus caerulescens*
Ashy Woodswallow	*Artamus fuscus*

The important feature of this site is the presence of two major forest types: Moist Deciduous Forest having avian elements of the Western Ghats, and on the rain shadow side, Dry Deciduous Forest showing species of the much drier Deccan regions. BirdLife International (undated) has identified 15 species in Biome 10 (Indian Peninsula Tropical Moist Forest) which occur mainly in the Western Ghats Endemic Bird Area (EBA 123). Seven species of Biome 10 have been noted from this IBA till now. Similarly, in Biome 11 (Indo-Malayan Tropical Dry Zone), BirdLife International identified 59 species. Twenty-one of these are found in Nagarhole NP and more are likely to be found, if detailed research is conducted. Many of the species listed in Biome 11 have adapted to man-modified habitats, therefore they are widespread and common.

This site has been selected as an IBA as it has Threatened species, restricted-range (endemic) species, and biome-restricted assemblages. It also forms an important part of a much larger conservation unit that includes at least four IBAs (Nagarhole, Mudumalai, Bandipur, and Wayanad). Furthermore, it has extensive dry deciduous and moist forests, providing habitats to a large number of bird species. Their diversity, density, and distribution need to be studied. The IBA supports a healthy population of *Gyps bengalensis*. Flocks of over 100 have been seen attending tiger kills, along with small numbers of *Aegypius calvus*. Nagarhole is one of the last few sites in southern India where all three Critically Endangered species of vultures are found (S. Subramanya, *pers. comm*. 2014).

Among the Near Threatened species, Nagarhole has a semi-feral population of Alexandrine Parakeet *Psittacula eupatria* (S. Subramanya, *pers. comm*. 2014), not found naturally in southern India, and those seen are generally escapee birds now living and breeding freely. In India, *P. eupatria* is resident mainly in north, northeast, and central India. Interestingly, it is resident in Sri Lanka (Rasmussen & Anderton 2012).

OTHER KEY FAUNA

The diverse fauna of this IBA includes North Western Langur *Semnopithecus hypoleucos*, Bonnet Macaque *Macaca radiata*, and Slender Loris *Loris tardigradus*. Notable among the carnivores are Tiger *Panthera tigris*, Leopard *P. pardus*, Leopard Cat *Prionailurus bengalensis*, Jungle Cat *Felis chaus*, Golden Jackal *Canis aureus*, Wild Dog *Cuon alpinus*, and Sloth Bear *Melursus ursinus*, while the Striped Hyaena *Hyaena hyaena* is rare. Herbivores include Asiatic Elephant *Elephas maximus* with a population of *c.* 300, Spotted Deer *Axis axis*, Sambar *Rusa unicolor*, Indian Muntjac or Barking Deer *Muntiacus muntjak*, Four-horned Antelope *Tetracerus quadricornis*, Mouse Deer *Moschiola indica*, Gaur *Bos gaurus*, and Wild Boar *Sus scrofa*. Small

DHRITIMAN MUKHERJEE

Nagarhole is famous for large ungulates, and associated predators such as the Wild Dog *Cuon alpinus*

DHRITIMAN MUKHERJEE

Moist deciduous forest (above) is found in the northern and western parts of Nagarhole, while dry deciduous forest is present in the southeastern parts. More than 230 species of birds have been reported from this IBA, including many globally Threatened species and Western Ghats endemics

mammals include the Small Indian Civet *Viverricula indica*, Common Palm Civet *Paradoxurus hermaphroditus*, Brown Mongoose *Herpestes fuscus*, Stripe-necked Mongoose *H. vitticollis*, Common Otter *Lutra lutra*, Black-naped Hare *Lepus nigricollis*, Pangolin *Manis crassicaudata*, Common Giant Flying Squirrel *Petaurista petaurista*, Indian Giant Squirrel *Ratufa indica maxima*, and Porcupine *Hystrix indica*. Among reptiles, Mugger *Crocodylus palustris*, Indian Monitor Lizard *Varanus bengalensis*, and Rock Python *Python molurus* are present.

LAND USE

- Nature conservation and research

THREATS AND CONSERVATION ISSUES

- Poaching
- Illegal tree cutting
- Tourism
- Forest fires

Nagarhole NP is always in the news due to elephant poaching or the issue of resettlement of tribals. Invasive species such as Lantana are a huge problem in the park. In March, 2012, a part of the core area of Nagarhole NP, encompassing grassy swampland surrounded by bamboo groves, was devastated by fire.

KEY CONTRIBUTORS

IBA Team, S. Subramanya.

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Link

http://ebird.org/ebird/hotspot/L2612302

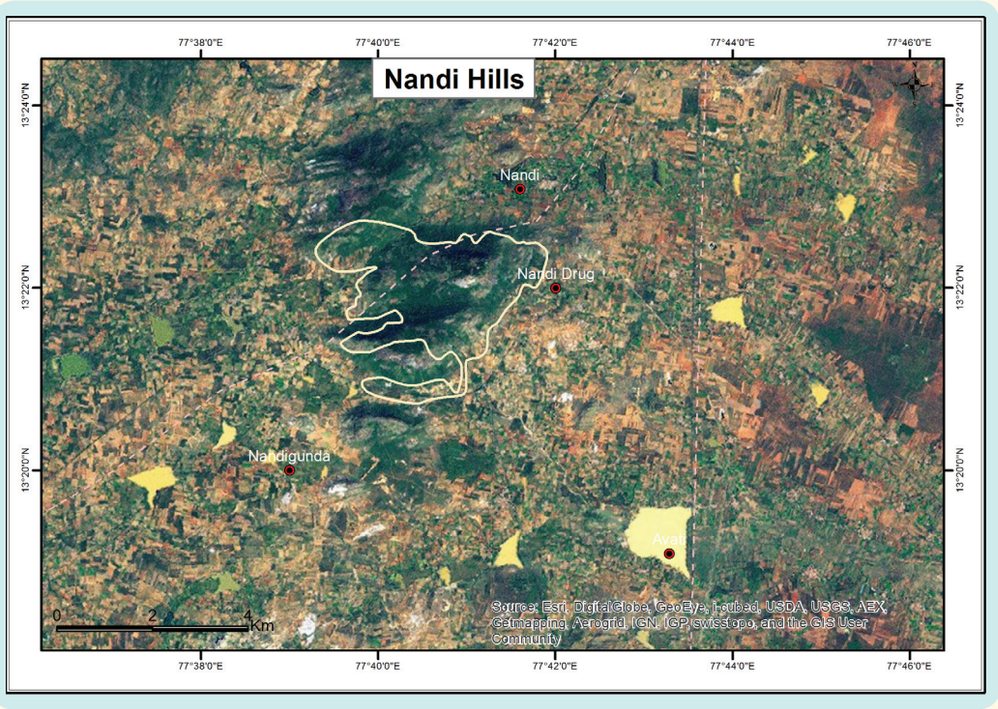
NANDI HILLS

IN-KA-26

IBA Site Code	: IN-KA-26	**Altitude**	: 1,400 msl
Administrative Region (State)	: Karnataka	**Rainfall**	: 600 mm
District	: Kolar	**Temperature**	: 10 °C to 35 °C
Coordinates	: 13° 21' 45" N, 77° 40' 30" E	**Biogeographic Zone**	: Deccan Peninsula
Ownership	: State	**Habitats**	: Tropical Dry Deciduous Forest, Tropical Secondary Scrub
Area	: Not available		

IBA CRITERIA: A1 (Threatened species), A2 (Endemic Bird Area 123: Western Ghats; Secondary Area s072: Southern Deccan Plateau), A3 (Biome 11: Indo-Malayan Tropical Dry Zone)

PROTECTION STATUS: Not officially protected. Hill top managed by Karnataka State Department of Horticulture.



GENERAL DESCRIPTION

The Nandi Hills, also referred to as Nandi Durg, *c.* 60 km north of Bengaluru (=Bangalore), is a popular tourist spot. The site lies within the 2,837 ha Nandi State Forest, comprising three main hillocks (>1,400 m) with seven peaks in all. Of these, Nandi Hill is the tallest (1,435 m). The site is also of great historical importance, particularly for an ancient Shiva temple dating back to the 9th century, after which the hills may have got their name.

Though the site has a general pattern of scrub and deciduous vegetation, altitudinal variations in the floristic composition can be seen (Boraiah & Fathima 1970). There is an extensive plateau on the top, sloping to the west, that harbours a crater-like depression in the northwest. Part of this depression supports evergreen vegetation with a dense shrub layer dominated by *Coffea* sp. In addition to a few lianas, the trunks and branches of the vegetation within this evergreen patch are draped with *Sphagnum* moss (Subramanya *et al.* 1994).

The hill slopes and valleys are covered with open scrub, and at places there are introduced species like *Eucalyptus* and *Shorea talura*.

Most of the original forest cover has disappeared, replaced by secondary growth, primarily thorny scrub. However, some natural forest is still surviving, especially near the summit (Ghorpade *et al.* 1974). *Lantana* grows like a weed and has invaded the undergrowth, replacing native flora. The hillsides are clothed with scrub forest, mixed with *Eucalyptus*.

AVIFAUNA

During his Mysore survey, Ali (1939) visited Nandi Hills and made notes on the avifauna. Later, Ghorpade *et al.*

(1974) made several trips to this area for birdwatching and insect collection, and recorded only 38 bird species, some of them more common to hills than the Deccan plains. But none of these observers recorded the globally Threatened Yellow-throated Bulbul *Pycnonotus xantholaemus*, till Subramanya *et al.* (1991) visited this area, especially looking for this bird. They found that it lives "near vertical slopes of giant rocky knobs dotted at places with dense canopies of stunted trees such as *Ficus montana* growing out of cracks and crevices."

Subramanya *et al.* (1994) sighted the Nilgiri Wood-pigeon *Columba elphinstonii* in 1987, 1990, 1991, and 1992 at an elevation of 1,450 m. This is an interesting record, as the species is generally found in the moist evergreen biotope of the Western Ghats from Kerala to western Maharashtra (Ali & Ripley 1987, Grimmett *et al.* 1998). Subramanya (2005), during a trip to Nandi Hills on January 31, 2005, found about 10 Nilgiri Wood-pigeon in a patch of evergreen forest. A small population is resident in Nandi Hills.

The Nilgiri Wood-pigeon is listed as Vulnerable by BirdLife International (2001) owing to its small, declining population, as a result of widespread destruction of its forest habitat.

In the evergreen patches of forest, Subramanya *et al.* (1994) and Prasad *et al.* (1995) recorded many forest species such as Black-naped Oriole *Oriolus chinensis*, Blue-capped Rock-thrush *Monticola cinclorhynchus*, Orange-headed Thrush *Zoothera citrina cyanotus*, Blackbird *Turdus merula*, Indian Blue Robin *Luscinia brunnea*, and Pied Thrush *Zoothera wardii*.

Nearly a decade ago, White-rumped Vulture *Gyps bengalensis* and Long-billed Vulture *G. indicus* used to occur in and around Nandi Hills, but there are no records now. Nonetheless we are keeping them in the birdlist with the hope that when diclofenac is effectively banned all over India, these birds may recolonize their former range. Similarly, Red-headed Vulture *Aegypius calvus* has also disappeared from this IBA.

The site lies in the Southern Deccan Plateau which comes under Biome 11 (Indo-Malayan Tropical Dry Zone), according to the classification of biomes by BirdLife International (undated). In this biome, 59 species have been listed which could be considered as representative of its bird assemblages. This biome includes a wide range of habitats, including forests and open country. Many of the species listed have adapted to man-modified habitats, thus they are quite widespread and common. Out of the 59 species, 24 have been seen at Nandi Hills and the environs. Therefore, this site fulfils A3 criteria (the site is known or thought to hold a significant component of the group of species whose distributions are largely or wholly confined to one biome: BirdLife International, undated).

CLEMENT FRANCIS

The Nandi Hills, also referred to as Nandi Durg because of an ancient Shiva temple dating back to the 9th century, after which the hills may have got their name, comprise seven peaks, the tallest being 1,435 m

CRITICALLY ENDANGERED	
White-rumped Vulture (old record)	*Gyps bengalensis*
Long-billed Vulture (old record)	*Gyps indicus*
Red-headed Vulture (old record)	*Aegypius calvus*
ENDANGERED	
Egyptian Vulture	*Neophron percnopterus*
VULNERABLE	
Nilgiri Wood-pigeon	*Columba elphinstonii*
Yellow-throated Bulbul	*Pycnonotus xantholaemus*
SECONDARY AREA S072: SOUTHERN DECCAN PLATEAU	
Yellow-throated Bulbul	*Pycnonotus xantholaemus*
BIOME 11: INDO-MALAYAN TROPICAL DRY ZONE	
Red-headed Vulture (old record)	*Aegypius calvus*
Jungle Bush-quail	*Perdicula asiatica*
Painted Spurfowl	*Galloperdix lunulata*
Plum-headed Parakeet	*Psittacula cyanocephala*
Sirkeer Malkoha	*Phaenicophaeus leschenaultii*
Common Indian Nightjar	*Caprimulgus asiaticus*
Black-rumped Flameback	*Dinopium benghalense*
White-naped Flameback	*Chrysocolaptes festivus*
Ashy-crowned Sparrow-lark	*Eremopterix grisea*
Black-headed Cuckooshrike	*Coracina melanoptera*
Small Minivet	*Pericrocotus cinnamomeus*
Common Woodshrike	*Tephrodornis pondicerianus*
White-browed Bulbul	*Pycnonotus luteolus*
Indian Robin	*Saxicoloides fulicata*
Tawny-bellied Babbler	*Dumetia hyperythra*
Large Grey Babbler	*Turdoides malcolmi*
Jungle Babbler	*Turdoides striatus*
White-headed Babbler	*Turdoides affinis*
Jungle Prinia	*Prinia sylvatica*
Ashy Prinia	*Prinia socialis*
White-browed Fantail	*Rhipidura aureola*
Grey-headed Starling	*Sturnus malabaricus*
Brahminy Starling	*Sturnus pagodarum*
White-bellied Drongo	*Dicrurus caerulescens*

OTHER KEY FAUNA

Bonnet Macaque *Macaca radiata*, Jungle Cat *Felis chaus*, Golden Jackal *Canis aureus*, Wild Boar *Sus scrofa*, and Indian Grey Mongoose *Herpestes edwardsii* are known to occur within the region. Among reptiles, Bamboo Pit Viper *Trimeresurus gramineus* has been recorded in the evergreen patch.

LAND USE

- Tourism

THREATS AND CONSERVATION ISSUES

- Tourism
- Developmental activities

The habitats of the Nandi Hills give shelter to many globally Threatened and biome-restricted assemblages. The Yellow-throated Bulbul is one of the Vulnerable key species of this IBA. Since the site is well known to tourists and is one of the most sought after tourist and weekend picnic destinations, some specific areas where these birds are normally seen should be completely protected for their long-term conservation. There is tremendous pressure on the hilltop habitat and the vegetation. The Department of Horticulture is on a constant hilltop improvement drive with a view to improve public amenities and to make the area more attractive to visitors. This does not work in the interest of birds. In 2009, there was a proposal to establish a "food court" on top of Nandi Hills, right in the middle of the evergreen patch inhabited by the Nilgiri Wood-pigeon and other wet zone species (Mohan 2009), which elicited wide ranging protests from birdwatchers and nature enthusiasts. A persistent campaign and dialogue with concerned officials resulted in shifting of the location of the food court.

Nandi Hills are currently undergoing a multi-crore development progamme, including a one crore renovation of the Tipu Fort, via private-public partnership, to transform the hills into a tourist hub. A 30 lakh rupees project to build a stage on a three-and-a-half acre grove, which has hundreds of *Eucalyptus* and Rain trees, is underway, to conduct cultural programmes. Furthermore, the Horticulture Department is developing 140 acres of pristine land in the Nandi Hills region to create a large scale exotic botanical garden. A state of the art planetarium, with an initial one crore rupees investment, is also being constructed. A gondola lift system will connect the peak of Nandi Hill with nearby Muddenahalli.

VINAYAK YARDI

The Nilgiri Wood-pigeon is endemic to the Western Ghats, and has a small population in Nandi Hills

CLEMENT FRANCIS

Nandi Hills, about 60 km from Bengaluru, is an interesting area as it supports evergreen vegetation in an otherwise dry deciduous area

Among other biotic factors, Bonnet Macaque *Macaca radiata* has become a threat to the Vulnerable Nilgiri Wood-pigeon (Subramanya 2005).

KEY CONTRIBUTORS

S. Subramanya, IBA team.

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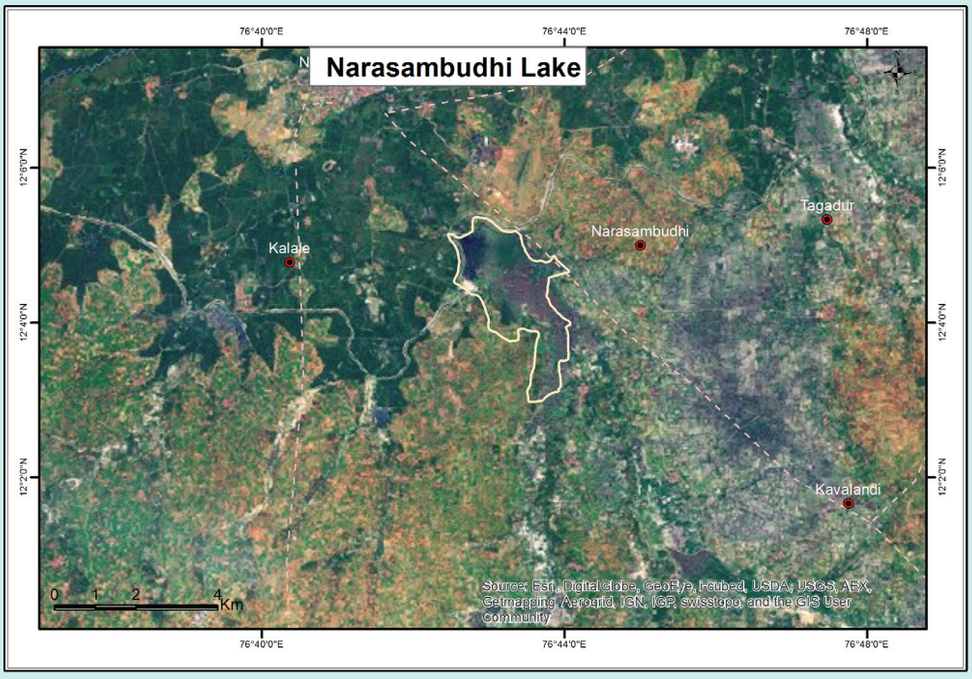
NARASAMBUDHI LAKE

IN-KA-27

IBA Site Code	:	IN-KA-27	**Area**	:	809 ha
Administrative Region (State)	:	Karnataka	**Altitude**	:	500 msl
District	:	Mysore	**Rainfall**	:	650 mm
Coordinates	:	12° 04' 60" N, 76° 43' 00" E	**Temperature**	:	15 °C to 38 °C
			Biogeographic Zone	:	Deccan Peninsula
Ownership	:	State	**Habitats**	:	Freshwater Wetland

IBA CRITERIA: A1 (Threatened species), A4i (≥1% of biogeographic population)

PROTECTION STATUS: Not officially protected.



GENERAL DESCRIPTION

This irrigation tank was created by a small dam built across the Gundal river, a tributary of the Kabini (Kapila) river, 5 km from the temple town of Nanjangud, which is situated 20 km south of Mysore city. It is a fairly important irrigation tank in Mysore district in terms of both waterspread and the irrigated area.

The tank is surrounded by Coconut plantations, an *Acacia* plantation of the Forest Department, paddyfields, and the Tagadur Ramachandra Rao Canal (Kabini dam right bank canal).

Islam & Rahmani (2008) proposed Narasambudhi Lake as a potential Ramsar Site as it qualifies for Ramsar Criteria 2 (wetland supports threatened ecological communities), Criteria 4 (wetland provides refuge during adverse condition to threatened species), and Criteria 6 (wetland regularly supports 1% of the individuals in a population of one species or subspecies). It comes under Ramsar Wetland Type 6 (water storage impoundment).

AVIFAUNA

This IBA is an important congregation site for the Bar-headed Goose *Anser indicus*, Spot-billed Pelican *Pelecanus philippensis*, Black-headed or White Ibis *Threskiornis melanocephalus*, and Glossy Ibis *Plegadis falcinellus*, and a winter home to the globally Threatened Greater Spotted Eagle *Clanga clanga*. Nearly 750 Bar-headed Geese (1% threshold = 560; Wetlands International 2012), more than 2,000 Glossy Ibis (1% threshold 250), 700 Black-headed Ibis (1% threshold 250), and 200 Spot-billed Pelican (1% threshold 100) winter in this lake, along with one or two individuals of the Greater Spotted Eagle.

CRITICALLY ENDANGERED	
White-rumped Vulture (old record)	*Gyps bengalensis*
ENDANGERED	
Egyptian Vulture	*Neophron percnopterus*
Black-bellied Tern	*Sterna acuticauda*
VULNERABLE	
Asian Woollyneck	*Ciconia episcopus*
Greater Spotted Eagle	*Clanga clanga*
Indian Spotted Eagle	*Clanga hastata*
NEAR THREATENED	
Spot-billed Pelican	*Pelecanus philippensis*
Oriental Darter	*Anhinga melanogaster*
Painted Stork	*Mycteria leucocephala*
Black-headed Ibis	*Threskiornis melanocephalus*
Pallid Harrier	*Circus macrourus*
Red-headed Falcon	*Falco chicquera*
River Tern	*Sterna aurantia*
Black-tailed Godwit	*Limosa limosa*

Large numbers of waders and ducks occur in winter, especially the Northern Pintail *Mereca acuta* and Common Pochard *Aythya ferina* (when the water is deeper) and Garganey *Querquedula querquedula* and Northern Shoveller *Anas clypeata* (when it is shallow). This IBA is a very rich birding area, where more than 100 species can easily be recorded on a three-hour morning visit in winter (T. Shivanand, *pers. comm.* 2003). This site easily fulfils A1 and A4i IBA criteria, developed by BirdLife International (undated).

Based on various surveys by local birdwatchers, an online group Mysore Nature (website <www.mysorenature.org>) has listed 202 species of birds in Narasambudhi Lake.

(http://www.mysorenature.org/around-mysore/narasambudhi-Nanjangud-Sector/bird-checklist. Accessed on 03/02/2014)

OTHER KEY FAUNA

As this artificial waterbody is surrounded by human habitation and cultivation, no large wild mammal is found here. No information is available on reptiles, amphibians, or fish fauna. About 83 species of butterflies have been recorded at the lake.

LAND USE

- Agriculture: when tank water is shallow
- Forest nursery

THREATS AND CONSERVATION ISSUES

- Siltation
- Weak bund, breached at several places due to lack of maintenance
- Poaching

Over the years, the catchment area of the Gundal has been denuded of tree cover. The lake fills completely only once or twice in a decade, at other times it is remains partially filled. Before the construction of the Kabini Dam in the 1960s, the lake irrigated more than 3,500 acres. The importance of this lake is evident from the inauguration plaque of the right bank canal, which was laid by the Chief Minister of Karnataka in 1963. The construction of the Kabini canal downstream of the lake bund has led to a slow but sure neglect of the lake, which has gradually silted up after desilting operations were stopped in the 1970s.

A part of the lake bed is now used to cultivate sunflower crops. Another portion was used by the Forest Department to raise an *Acacia* plantation under its social forestry scheme. The plantation functions as a nesting ground for cormorants when the lake is full. However, encroachment by the sunflower cultivators needs to be immediately checked as their area is slowly increasing. Afforestation with native species should be done in the catchment area. Desilting work should be taken up immediately under the Tank Rejuvenation Scheme of the Karnataka State Government.

KEY CONTRIBUTORS

Late K.B. Sadananda, A. Shivaprakash, B.R. Sheshgiri, Vijayalaxmi Rao, Girija T., M. Sahana, Kiran Bagade.

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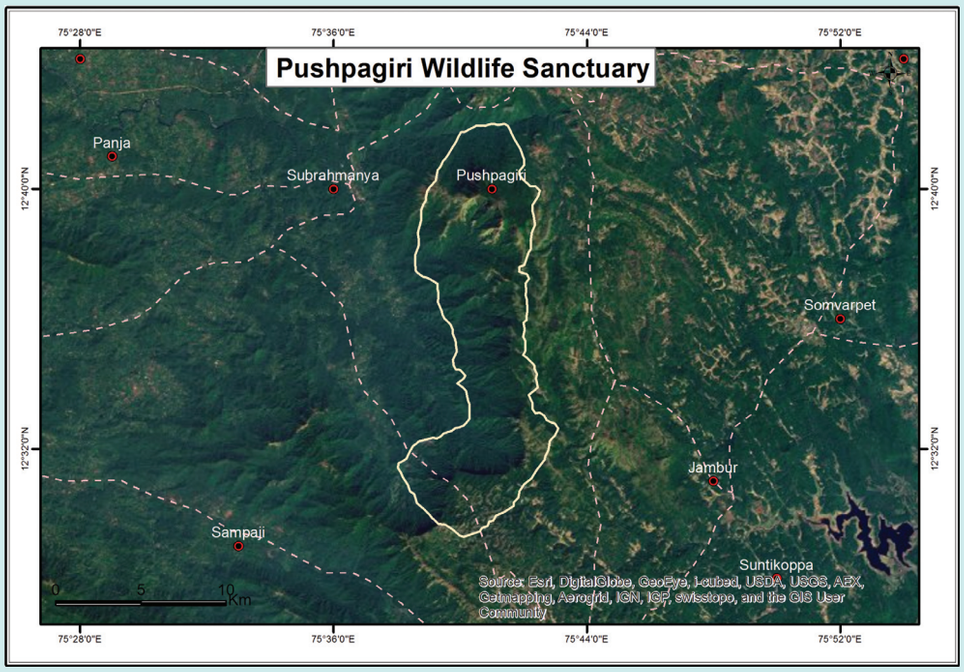
PUSHPAGIRI WILDLIFE SANCTUARY

IN-KA-28

IBA Site Code	: IN-KA-28	**Altitude**	: 160–1,712 msl
Administrative Region (State)	: Karnataka	**Rainfall**	: 6,500 mm
Districts	: Kodagu, Dakshina Kannada	**Temperature**	: 10 °C to 35 °C
Coordinates	: 12° 35' 30" N, 75° 40' 00" E	**Biogeographic Zone**	: Western Ghats
Ownership	: State	**Habitats**	: Tropical Wet Evergreen, and Semi-evergreen, Montane Wet Temperate Forests, Montane Grassy Slopes
Area	: 10,292 ha		

IBA CRITERIA: A1 (Threatened species), A2 (Endemic Bird Area 123: Western Ghats), A3 (Biome 10: Indian Peninsula Tropical Moist Forest)

PROTECTION STATUS: Wildlife Sanctuary, established September, 1987



GENERAL DESCRIPTION

The Pushpagiri Wildlife Sanctuary, situated in the Western Ghats, is covered with thick Evergreen and Semi-evergreen forests and shola grassland habitat interspersed with Rhododendron (Manjrekar 2000). The imposing Kumaraparvata Peak forms the core of the sanctuary, with dense sholas on the upper reaches and evergreen forests lower down. The steep terrain of the sanctuary has created some impressive waterfalls along the various streams that originate in these mountains. Due to its relative inaccessibility, the sanctuary has remained quite untouched. By road it can be approached from Mysore to Mercara (120 km), and on to the sanctuary (25 km).

To the north and the west, the sanctuary merges with the equally spectacular rainforests of Bisle (Sakleshpur Sub-division) and Kukke Subramanya of Mangalore Division. It is contiguous with Sampaje Reserve Forest to the south. Together, these forests are home to an extremely rich floral and faunal diversity. Most of the species, particularly toads and frogs, are yet to be recorded. The 1,800 m Kumarparvata and Pushpagiri Peaks in the sanctuary are among the most challenging treks in Karnataka. The sanctuary area gives rise to Kumaradhara, probably the only undammed river in Karnataka, still unpolluted and natural as it gushes out from these evergreen forests near the temple town of Kukke Subramanya.

AVIFAUNA

The birdlife has not been systematically studied, but T. Shivanand's observations (*pers. comm*. 2001) indicate the

presence of some 110 species. This IBA lies in the Western Ghats Endemic Bird Area (EBA 123) (Stattersfield *et al.* 1998). Of the 26 restricted-range species identified from this EBA, 12 are found here, proving the importance of this site. This list also includes one Endangered species Black-chinned Laughingthrush *Strophocincla jerdoni*, one Vulnerable species Nilgiri Wood-pigeon *Columba elphinstonii*, and three Near Threatened species.

BirdLife International (undated) has listed 15 biome-restricted species under Biome 10 (Indian Peninsula Tropical Moist Forest), of which 12 species have been found in Pushpagiri WLS. It is likely that with better surveys, the remaining three species, Blue-faced Malkoha *Phaenicophaeus viridirostris*, Hill Swallow *Hirundo domicola*, and Loten's Sunbird *Cinnyris lotenia*, would also be found.

This site was selected as an IBA due to the presence of globally threatened and many restricted-range and biome species.

OTHER KEY FAUNA

This IBA is rich in mammalian diversity. Almost all the larger mammals of the Western Ghats are found here, from the Asiatic Elephant *Elephas maximus* to Brown Palm Civet *Paradoxurus jerdoni.* Three species of primates are present: South Western Langur *Semnopithecus hypoleucos*, the endemic and Endangered Lion-tailed Macaque *Macaca silenus*, and the more common Bonnet Macaque *Macaca radiata*. Among the carnivores are Tiger *Panthera tigris*, Leopard *P. pardus*, Wild Dog *Cuon alpinus*, Jungle Cat *Felis chaus,* and Sloth Bear *Melursus ursinus*. Large herbivores include the Gaur *Bos gaurus*, Sambar *Rusa unicolor*, Cheetal *Axis axis*, Barking Deer *Muntiacus muntjak,* and Wild Boar *Sus scrofa*. Mouse Deer *Moschiola indica* is also reported from this sanctuary. The Nilgiri Marten *Martes gwatkinsi,* and Clawless Otter *Amblonyx cinereus* are also reported. Reptiles include the Western Ghats Gliding Lizard *Draco dussumieri,* King Cobra *Ophiophagus hannah,* and Bamboo Pit Viper *Trimeresurus gramineus.*

LAND USE

- Forestry
- Tourism and recreation
- Nature conservation and research

THREATS AND CONSERVATION ISSUES

- Land encroachment
- Poaching
- Uncontrolled ecotourism
- Firewood collection by locals from Kukke Subramanya

A new road is being built to Hamihalla village through the sanctuary. The residents of Hamihalla say they are content with the existing road and there is no need for an

ENDANGERED	
Banasura Laughingthrush	*Strophocincla jerdoni*
VULNERABLE	
Nilgiri Wood-pigeon	*Columba elphinstonii*
NEAR THREATENED	
Black-and-Orange Flycatcher	*Ficedula nigrorufa*
Nilgiri Flycatcher	*Eumyias albicaudatus*
Grey-headed Bulbul	*Microtarsus priocephalus*
ENDEMIC BIRD AREA 123: WESTERN GHATS	
Nilgiri Wood-pigeon	*Columba elphinstonii*
Malabar Parakeet	*Psittacula columboides*
Malabar Grey Hornbill	*Ocyceros griseus*
Grey-headed Bulbul	*Microtarsus priocephalus*
Wynaad Laughingthrush	*Dryonastes delesserti*
Banasura Laughingthrush	*Strophocincla jerdoni*
Indian Rufous Babbler	*Turdoides subrufus*
Black-and-Orange Flycatcher	*Ficedula nigrorufa*
Nilgiri Flycatcher	*Eumyias albicaudatus*
White-bellied Blue Flycatcher	*Cyornis pallipes*
Small Sunbird	*Leptocoma minima*
White-bellied Treepie	*Dendrocitta leucogastra*
BIOME 10: INDIAN PENINSULA TROPICAL MOIST FOREST	
Sri Lanka Frogmouth	*Batrachostomus moniliger*
Jerdon's Nightjar	*Caprimulgus atripennis*
Indian Swiftlet	*Collocalia unicolor*
Malabar Trogon	*Harpactes fasciatus*
Malabar Pied Hornbill	*Anthracoceros coronatus*
White-cheeked Barbet	*Megalaima viridis*
Malabar Barbet	*Psilopogon malabaricus*
Yellow-browed Bulbul	*Acritillas indica*
Malabar Whistling-thrush	*Myophonus horsfieldii*
Indian Scimitar-babbler	*Pomatorhinus horsfieldii*
Dark-fronted Babbler	*Rhopocichla atriceps*
Black-throated Munia	*Lonchura kelaarti*

VINAYAK YARDI

Twelve endemic birds of the Western Ghats are found in Pushpagiri WLS, including the Black-and-Orange Flycatcher *Ficedula nigrorufa*

DHRITIMAN MUKHERJEE

Pushpagiri Wildlife Sanctuary, situated in the Western Ghats, is covered with thick evergreen and semi-evergreen forests, and *shola* grassland habitat interspersed with Rhododendron

alternative longer route. The road has been tarred up to the entrance of the sanctuary. For the time being, construction has been stopped. Any further construction will destroy prime grasslands and virgin shola rainforests.

Netravati Diversion Scheme: The proposed network of canals and dams will start at Lingadahole in Pushpagiri WLS and cut north into Kudremukh National Park. The proposed canals will then pass through Bhadra Tiger Reserve. Unlike the earlier hydroelectric projects in the Western Ghats, most of which submerged forest areas at the dam sites and backwaters only, this proposed scheme is going to deforest the Western Ghats for a long stretch.

While the Netravati diversion project feasibility report claims that the total forest area intended to be submerged is 7,716 ha, it does not mention the forest cover that will be lost to transport men and material, or the service roads to be constructed to approach the work sites, settlements for the construction workers, and for those finally involved in working and maintenance of the power project. Nor does it mention the power lines to be laid and finally the green cover to be lost while digging the canal.

In June, 2012, intervention by the courts and conservationists stopped the destruction of a critical tiger corridor in the Western Ghats, where a private firm was permitted to set up windmills by the Karnataka Forest Department in violation of rules. The government withdrew the permission given to a Bangalore-based hydropower company to install windmills to generate 25 MW of power in Moorkangudda RF in Sakleshpur *taluk* of Hassan district. Moorkangudda is a critical link between Pushpagiri WLS and Kudremukh NP. It is the habitat of endangered wildlife, including the Tiger, Leopard, Wild Dog, Gaur, Sambar, and several others. The area has grassland and shola forests, and matches Bababudangiri area in its natural beauty.

KEY CONTRIBUTORS

Thejaswi Shivanand, Ameen Ahmed, J. Praveen.

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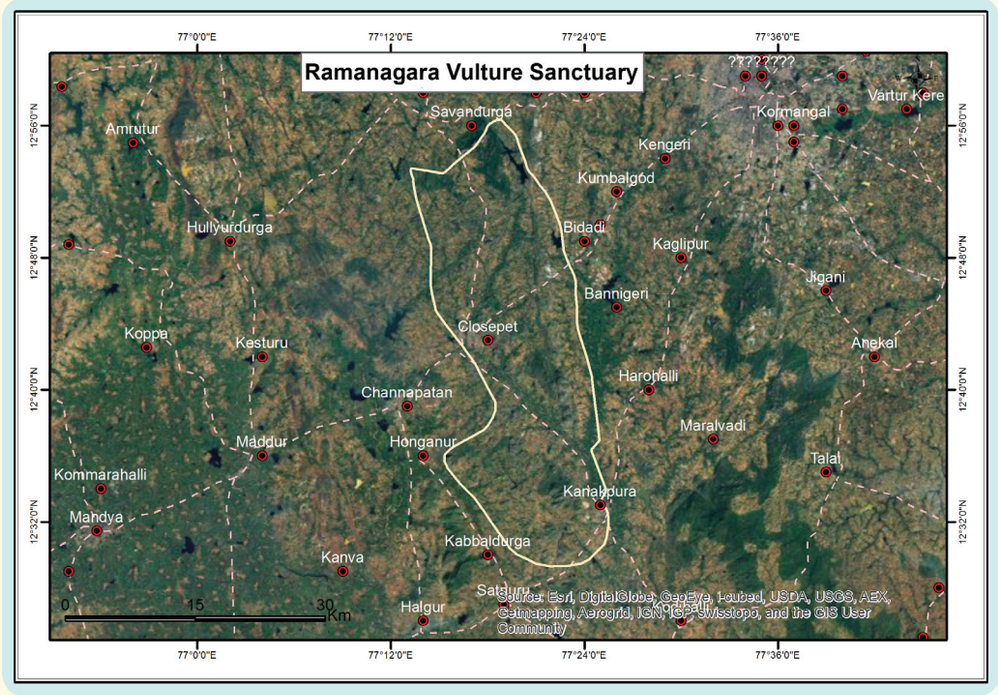
RAMANAGARA (RAMADEVARABETTA) VULTURE RESERVE

IBA Site Code	:	IN-KA-29	**Area**	:	346 ha
State	:	Karnataka	**Altitude**	:	913 msl
District	:	Bangalore Rural	**Rainfall**	:	*c.* 600 mm
Coordinates	:	12° 45' N, 77° 18' E	**Temperature**	:	10 ºC to 38 ºC
			Biogeographic Zone	:	Deccan Peninsula
Ownership	:	State	**Habitats**	:	Tropical Thorn Forest

IBA CRITERIA: A1 (Threatened species), A2 (Secondary Area s072: Southern Deccan Plateau), Data Deficient

PROTECTION STATUS: Vulture Sanctuary, declared January 31, 2012.



GENERAL DESCRIPTION

This IBA is composed of a series of spectacular domed outcrops bordering the plateau on which Bengaluru is located, with typical Tropical Dry Deciduous Forest and Thorn Scrub vegetation dominating the landscape, along with areas of sorghum cultivation, coconut plantations, and *Eucalyptus* jungles. These hill ranges are spread over an area of 25 x 75 km, with several lofty peaks interspersed with villages and dry cultivation. The Bengaluru and Mysore highway cuts through the area.

AVIFAUNA

The birdlife is similar to that encountered in any scrub forest, with a good, scattered population of the restricted-range peninsular endemic, Yellow-throated Bulbul *Pycnonotus xantholaemus*. Subramanya & Naveein (2006) have recorded 150 species of birds, including the endemic Yellow-throated Bulbul and Indian or Long-billed Vulture *Gyps indicus*. During their survey in 2005–2006, they found eight adults of Long-billed Vulture, the last known population of this Critically Endangered species in this area. Earlier, White-rumped Vulture *Gyps bengalensis* was also seen in the area but there is no recent record.

Based on the presence of the last few surviving Long-billed Vultures, the Government of Karnataka declared 346 ha as a Vulture Sanctuary on January 31, 2012.

This site could be very important for the Yellow-throated Bulbul, which is Vulnerable, according to BirdLife International (2001). Therefore, we are treating this area as an IBA.

A single Near Threatened Himalayan Vulture *Gyps himalayensis* was recently reported from this site (Praveen *et al*. 2013).

DEVAPRAKASH J.

Considering the critical status of the Long-billed Vulture *Gyps indicus* that breeds in Ramanagara Vulture Sanctuary, it is unlikely that the vultures will survive for long. As Long-billed Vulture is the trigger species of the site, Ramanagara may have to be deleted from the IBA list in future

CRITICALLY ENDANGERED	
White-rumped Vulture (old record)	*Gyps bengalensis*
Long-billed Vulture	*Gyps indicus*
ENDANGERED	
Egyptian Vulture	*Neophron percnopterus*
VULNERABLE	
Indian Spotted Eagle	*Clanga hastata*
Yellow-throated Bulbul	*Pycnonotus xantholaemus*
SECONDARY AREA S072: SOUTHERN DECCAN PLATEAU	
Yellow-throated Bulbul	*Pycnonotus xantholaemus*

OTHER KEY FAUNA

Large mammals found in this IBA include Leopard *Panthera pardus*, Sloth Bear *Melursus ursinus*, Wild Boar *Sus scrofa*, Bonnet Macaque *Macaca radiata*, Golden Jackal *Canis aureus*, Jungle Cat *Felis chaus*, and Black-naped Hare *Lepus nigricollis*. Asiatic Elephant *Elephas maximus* strays into the area. There have been a few instances of bear-human conflict in the area. Considering the healthy population of Sloth Bear that the IBA supports, the Karnataka State Forest Department has submitted a proposal to declare Ramanagara as a Sloth Bear Sanctuary.

LAND USE

No information.

THREATS AND CONSERVATION ISSUES

- Encroachment for agriculture
- Mining on the hills for granite
- Tourist resorts
- Felling of trees

The hills are famous for a good quality granite called Closepet granite. This used to be in great demand for export, but now caters mainly to the domestic market. Loss of vegetation due to fuel wood collection, mainly to supply the growing town of Ramanagara nearby, is a big conservation problem, which can be solved only with the cooperation of the local people and by providing cheaper alternative fuel.

Rapid urbanization in and around the hill where the vultures breed is a constant threat. For example, in 2010, a private resort at the foot of the hill where the vultures breed was stopped only at the intervention of conservationists and NGOs such as Kumble Foundation. This led to action taken by the Government, declaring Ramanagara Vulture Sanctuary.

The Bengaluru-Mysore road has a very high volume of traffic, which has resulted in leopard road kills.

KEY CONTRIBUTOR

S. Subramanya

KEY REFERENCE

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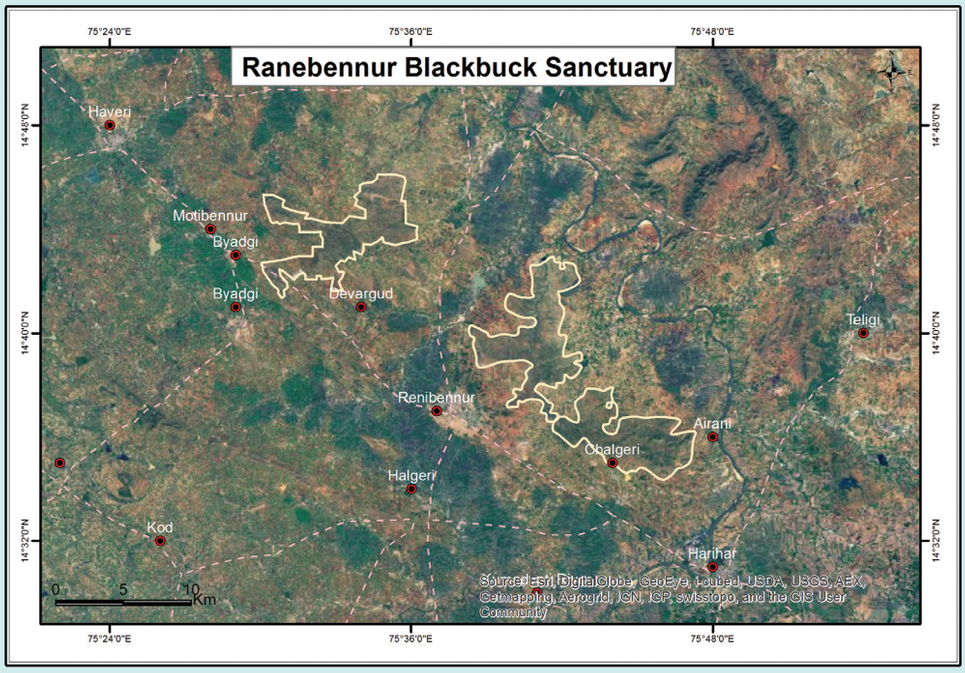
RANEBENNUR BLACKBUCK SANCTUARY

IN-KA-30

IBA Site Code	: IN-KA-30	**Altitude**	: 546–762 msl
Administrative Region (State)	: Karnataka	**Rainfall**	: 623 mm
District	: Haveri	**Temperature**	: 13 °C to 38 °C
Coordinates	: 14° 38' 01" N, 75° 39' 07" E	**Biogeographic Zone**	: Deccan Peninsula
Ownership	: State	**Habitats**	: Southern Tropical Thorn Forests
Area	: 11,900 ha		

IBA CRITERIA: A1 (Threatened species)

PROTECTION STATUS: Wildlife Sanctuary, established June, 1974. Site no longer holds trigger species for which it was declared. IBA in Danger.



GENERAL DESCRIPTION

Ranebennur Blackbuck Sanctuary, located in Haveri district of Karnataka state, is one of the few sanctuaries established for the wildlife of the Indian plains. It is *c.* 120 km from Dharwad town. For administrative purposes, it is part of Haveri Forest Division, divided into three blocks, namely Hunashi Katti, Hullatti, and Halageri. Halageri Block is separated from the other two by the intervening agricultural lands, thus dividing the sanctuary into two areas, *c.* 7 km apart. The sanctuary is surrounded on all sides by agricultural land owned by local farmers (Karanth & Singh 1981). This sanctuary used to harbour the Critically Endangered Great Indian Bustard *Ardeotis nigriceps*, but this species has not been seen here for the last 25 years.

Till the 1970s, the whole area was denuded and overgrazed, with very few wild animals remaining. The Forest Department took on a massive plantation programme. With protection to the plantation, the beleaguered Blackbuck *Antilope cervicapra* gained some respite from poaching and its population started increasing. When the prey based improved, the Grey Wolf *Canis lupus* returned to the area. In 1974, the Forest Department declared Ranebennur as a wildlife sanctuary.

The vegetation of the sanctuary is classified as Southern Tropical Thorn Forest, with tree cover of *Acacia* sp. and ground cover of *Dodonaea*, *Cassia*, *Carissa*, *Acacia*, and *Lantana* species, and grass species of *Cenchrus* and *Stylozanthus*. Due to afforestation, *Eucalyptus* sp. has become established as the dominant tree. Other species used for afforestation are *Santalum album*, *Albizia lebbek*, *Cassia* sp., *Prosopis* spp., and *Leucaena* sp.

AVIFAUNA

About 130 species of birds are known to occur in the

SAMAD KOTTUR

CLEMENT FRANCIS

Extensive plantation of Eucalyptus and other species in the grasslands of Ranebennur has totally destroyed the habitat of Great Indian Bustard (inset), which depends on grassland and open countryside. No bustard has been seen in the last 25 years in this area

sanctuary (Samad Kottur, *pers. comm*. 2014). This site was selected as an IBA mainly due to the presence of the Great Indian Bustard but now the species is not seen, and it is very unlikely to appear due to its massive decline all over its range. It is hoped that if the grassland habitat is maintained, the bustard might reappear or it can be introduced if the Conservation Breeding Programme is successful. Therefore, Ranebennur site has not been deleted from our IBA list.

Other birds of conservation interest in the sanctuary are Indian Courser *Cursorius coromandelicus*, Montagu's Harrier *Circus pygargus*, Sirkeer Malkoha *Phaenicophaeus leschenaultii*, Painted Sandgrouse *Pterocles exustus*, and Chestnut-bellied Sandgrouse *Pterocles indicus*. Though not yet included in the globally Threatened category, some of these species are potential candidates for Near Threatened or even Vulnerable category, due to massive destruction of short grass plains. Pallid Harrier *Circus macrourus*, a Near Threatened species, is still found in small numbers. There is a good population of Indian Peafowl *Pavo cristatus*, Little Ringed Plover *Charadrius dubius*, and Red-naped Ibis *Pseudibis papillosa*.

VULNERABLE	
Asian Woollyneck	*Ciconia episcopus*
NEAR THREATENED	
Painted Stork	*Mycteria leucocephala*
Black-headed Ibis	*Threskiornis melanocephalus*
Pallid Harrier	*Circus macrourus*
River Tern	*Sterna aurantia*

Vultures that used to be quite common 20 years ago are no longer seen, except for an occasional record. Not many ornithologists visit the sanctuary, so the records of birds are neither authenticated nor regularly updated. Many species seen in nearby Hampi (Kottur 2014) are likely to be present in Ranebennur.

OTHER KEY FAUNA

Blackbuck is the keystone species of this sanctuary, with a population of nearly 1,000. Its main predator is the Grey Wolf *Canis lupus*. Blackbuck fawns are sometimes killed by Golden Jackal *Canis aureus*. Jungle Cat *Felis chaus* and Indian Fox *Vulpes bengalensis* are smaller predators, especially on the eggs and chicks of Great Indian Bustard. Striped Hyaena *Hyaena hyaena* is also reported. There are unconfirmed records of Leopard *Panthera pardus*. Indian Pangolin *Manis crassicaudata* and Indian Crested Porcupine *Hystrix indica* are reported. Wild Boar *Sus scrofa* has increased, much to the concern of the villagers. Owing to extensive plantation, forest species are on the rise in this sanctuary.

SAMAD KOTTUR

It could be too late to bring back the Great Indian Bustard to Ranebennur as its population has plummeted to a very low number. The grassland habitat is destroyed, therefore, bustards coming from other places to Ranebennur is unlikely

LAND USE

- Forestry
- Agriculture
- Tourism and recreation

THREATS AND CONSERVATION ISSUES

- Afforestation
- Poaching
- Fires
- Overgrazing
- Firewood collection
- Unsustainable exploitation

Introduction of indigenous species of plants will ensure a natural habitat structure for the wild fauna. The primary conservation issue in this IBA is the gradual disappearance of the Great Indian Bustard over the last three decades, mainly due to lack of focused attention on the habitat requirements of this grassland bird. Most of the so-called 'blanks' (grasslands) under the control of the Forest Department have been planted with exotic trees, while open areas outside their jurisdiction are under tremendous grazing pressure. This leaves the bustard with no habitat, and for the last 25 years, it has not been seen in Ranebennur, but even now, if effective conservation measures are taken and grassland developed, this rare bird might reappear. A management plan for the protection of bustard grassland habitat was given by Rahmani (1989), no timely action taken. The so-called Great Indian Bustard Rehabilitation Plot was developed when the bustard had disappeared!

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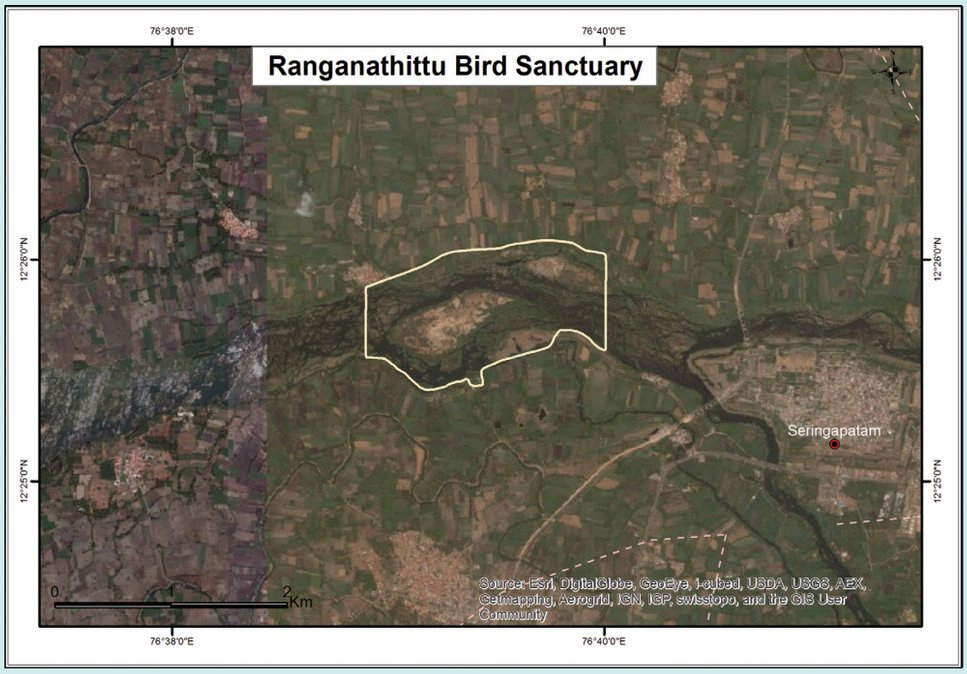
RANGANATHITTU BIRD SANCTUARY

IN-KA-31

IBA Site Code	: IN-KA-31	**Area**	: 67.5 ha
Administrative Region (State)	: Karnataka	**Altitude**	: 690–715 msl
District	: Mysore	**Rainfall**	: 800 mm
Coordinates	: 12° 22' 50" N, 76° 39' 05" E	**Temperature**	: 15 °C to 35 °C
Ownership	: State	**Biogeographic Zone**	: Deccan Peninsula
		Habitats	: Riverine Vegetation

IBA CRITERIA: A1 (Threatened species), A4i (>1% of biogeographic population threshold)

PROTECTION STATUS: Established July, 1940, officially declared Bird Sanctuary 1980.



GENERAL DESCRIPTION

Ranganathittu is one of the oldest bird sanctuaries of India, with one of the most picturesque heronries in the country. The sanctuary was declared in 1940, at the behest of Sálim Ali, after his Mysore State bird survey (Ali & Whistler 1942–1943), but was officially declared only in 1980. It is situated *c.* 16 km from Mysore, just off the Mysore-Srirangapatnam road. Ranganathittu is a cluster of six islets and one main island formed by a weir built by the ruler of Mysore across the River Kaveri in the 1640s. The weir has impounded water that is carried through an aqueduct to Srirangapatnam. The impounded water forms a large, deep reservoir with a number of islets, which provide good nesting habitat for birds. The sanctuary is surrounded by irrigated agricultural fields where many birds forage.

The Kaveri river is quite slow flowing within the sanctuary, with many secluded waterways where it is almost still, providing just the right type of habitat for colonial nesting of waterbirds. The flora is mainly riverine vegetation with *Salix* sp., *Terminalia arjuna*, *Vitex* sp., *Millettia pinnata*, *Ficus* sp., *Pithecellobium dulce*, *Pandanus tectorius*, *Caesalpinia bonducella*, bamboo and sedges.

AVIFAUNA

During early 1980 and before, nesting was mainly restricted to pre-monsoon and monsoon breeding. Due to staggered breeding season among the nesting species, bird nesting can be seen in the heronry round the year now. The breeders include Little Cormorant *Phalacrocorax niger*, Indian Cormorant *Phalacrocorax fuscicollis*, Great Cormorant *Phalacrocorax carbo*, Oriental Darter *Anhinga melanogaster*, Asian Openbill *Anastomus oscitans*, Black-headed Ibis *Threskiornis melanocephalus*, Eurasian Spoonbill *Platalea leucorodia*, eight heronry species: Little Egret *Egretta garzetta*, Grey Heron *Ardea cinerea*, Purple Heron *Ardea purpurea*, Great Egret *Ardea* (*Egretta*) *alba*,

DHRITIMAN MUKHERJEE

The birds in Ranganathittu have become used to people, so they can be approached quite close from the boat

Intermediate Egret *Egretta intermedia*, Cattle Egret *Bubulcus ibis*, Indian Pond-heron *Ardeola grayii*, and Black-crowned Night-heron *Nycticorax nycticorax*. Since the late 1980s, Painted Stork *Mycteria leucocephala* and Spot-billed Pelican *Pelecanus philippensis* have also commenced breeding at the site. In addition, nesting of White-breasted Waterhen *Amaurornis phoenicurus*, Great Thick-knee *Esacus recurvirostris*, Red-wattled Lapwing *Vanellus indicus*, Common Kingfisher *Alcedo atthis*, Stork-billed Kingfisher *Halcyon capensis*, White-throated Kingfisher *Halcyon smyrnensis*, Pied Kingfisher *Ceryle rudis*, River Tern *Sterna aurantia*, and Streak-throated Swallow *Hirundo fluvicola* can be seen within the sanctuary. Boat facility provided by the Forest Department enables close observation of the breeding activity, since the birds are used to the movement of humans and boats.

ENDANGERED	
Egyptian Vulture	*Neophron percnopterus*
VULNERABLE	
Asian Woollyneck	*Ciconia episcopus*
Indian Spotted Eagle	*Clanga hastata*
Greater Spotted Eagle	*Clanga clanga*
NEAR THREATENED	
Oriental Darter	*Anhinga melanogaster*
Painted Stork	*Mycteria leucocephala*
Spot-billed Pelican	*Pelecanus philippensis*
Pallid Harrier	*Circus macrourus*
Red-headed Falcon	*Falco chicquera*
River Tern	*Sterna aurantia*
Black-tailed Godwit	*Limosa limosa*

Nearly 170 bird species have been recorded. In winter, Indian Blue Robin *Luscinia brunnea*, Forest Wagtail *Dendronanthus indicus*, Western Marsh Harrier *Circus aeruginosus*, Common Swallow *Hirundo rustica*, Asian Paradise Flycatcher *Terpsiphone paradisi*, Greenish Warbler *Phylloscopus trochiloides*, Booted Warbler *Hippolais caligata*, Blyth's Warbler *Acrocephalus dumetorum*, Paddyfield Warbler *Acrocephalus agricola*, Brown Shrike *Lanius cristatus*, and Greater Spotted Eagle *Aquila clanga* are found here. There is a record of vagrant Lesser Frigate Bird *Fregata ariel* (Huilgol 2007), and sporadic sighting of resident Grey-headed Fish-eagle *Ichthyophaga ichthyaetus* and Lesser Fish-eagle *Ichthyophaga humilis*. Even a Steppe Eagle *Aquila nipalensis* was once sighted near Srirangapatnam which is near this IBA (see Link: Umesh Srinivasan 2001).

Habitat similar to Ranganathittu exists at Gende Hosalli Islands, a few kilometres downstream of the Kaveri river, however only a few colonies have been recorded. But sporadically, up to two dozen Oriental Darters breed in trees on the sides of feeder canals.

OTHER KEY FAUNA

The terrestrial and arboreal fauna of the sanctuary includes Mongoose *Herpestes edwardsi*, Monitor Lizard *Varanus bengalensis*, Jungle Cat *Felis chaus*, Indian Flying Fox (Fruit Bat) *Pteropus giganteus*, Bonnet Macaque *Macaca*

radiata, and Palm Civet *Paradoxurus hermaphroditus*. A large population of over 1,000 Greater Indian Fruit Bat *Pteropus giganteus* inhabits the tall trees at Ranganathittu.

The aquatic fauna includes Common Otter *Lutra lutra*. The sanctuary is also home to 30–40 Smooth-coated Otter *Lutrogale perspicillata*. A very healthy population of about 75–80 Marsh Crocodiles *Crocodylus palustris* inhabit the waters at Ranganathittu.

About 14 species of freshwater fishes including the Mahaseer are known to inhabit the waters at Ranganathittu: Deccan Mahseer *Tor khudree* (*Barbus tor*), Nilgiris Barb *Hypselobarbus dubius* (*Barbus dubius*), Carnatic Carp *Barbodes carnaticus* (*Barbus carnaticus*), Fringe-lipped Peninsular Carp *Labeo fimbriatus*, Orangefin Labeo *L. calbasu*, Cauvery White Carp (Mrigal Carp) *Cirrhinus cirrhosus*, Helicopter Catfish *Wallago attu*, Butter Fish *Callichorus bimaculatus*, Tank Gobi *Glassogobius striatus*, Cobra Snakehead *Channa marulius*, Banded Snakehead *C. striatus*, Spotted Snakehead *C. punctatus*, Spiny Eel *Mastacembelus armatus*, and Featherback *Notopterus notopterus*.

Ranganathittu has its own endemic species of plant *Iphigenia mysorensis*, a relative of the lily found nowhere else in the world.

TOURISM AND RECREATION

Ranganathittu is one of the most sought after destinations for tourists in this part of the country. Boating at this riverine habitat adds to the charm of the area. It also attracts travellers bound for Mysore, who often make a casual stopover at the sanctuary. With the breeding season of the birds spread throughout the year, there is a steady flow of visitors round the year. With several thousand visitors flocking at the site, tourism is an important money earner at the site.

THREATS AND CONSERVATION ISSUES

Floods: Flooding occurs regularly every monsoon, when excess water is released from the Krishnarajasagar Reservoir/Dam upstream from the sanctuary. During floods, the water level has been recorded rising up to about 5 m. As a consequence, most of the nests built at lower levels on the island vegetation get washed away. One of the nesting species that is most affected has been the Black-headed Ibis. However, once the flood waters recede, the birds start nesting again (Neginhal 1980, Shetty *et al*. 1991, Subramanya & Naveein 2005, Subramanya *et al*. 1991).

Pollution: Pollution load of fertilizers and pesticides drained from the surrounding agricultural land into the sanctuary is a major and persistent concern. Bagasse from sugarcane industries upstream often finds its way into the sanctuary. The effect on the waters has not been studied.

Tourism: Over 200,000 tourists visit this sanctuary every year. As in other tourist destinations, this seems to be the major problem here. The huge number of visitors disturbs the nesting birds on the islands. Breeding birds are disturbed when tourists go very near the birds, attracting crows which pillage eggs and chicks. In fact, the crows follow the boats! Restricting recreation and tourism in the nesting area would help to prevent degradation of the habitat and

ASAD R. RAHMANI

Ranganathittu is one of the most popular birding areas for serious birdwatchers, amateur photographers, and the general public

ASAD R. RAHMANI

Although 15 to 20 large birds are the star attraction, more than 170 species have been identified from Ranganathittu, including a few globally Threatened birds

biodiversity. As a consequence of high visitor flow, the growing population of crows and monkeys in Ranganathittu Bird Sanctuary is becoming a menace for the other birds and even for tourists. It is reported that the crows and monkeys scare away the birds and also destroy their eggs. They have to be controlled, and if necessary even exterminated.

Intensive photography: Ranganathittu is one of the most favoured destinations for nature and wildlife photography. Photographers trying to get too close to nesting birds are a source of immense disturbance. Birds like the River Tern, which nest on the rocky outcrops in the midstream of the river are frequently disturbed. There should be a policy to restrict photographers from approaching too close to the nesting area.

Mini hydel projects: Very recently, there was a move to establish a 3MW mini hydel project very close to the sanctuary. As the project was proposed to be established so close to the sanctuary boundary and within the designated Eco-sensitive Zone around the sanctuary, permission was denied (Anon. 2012).

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Umesh Srinivasan (2001) http://groups.yahoo.com/group/bngbirds/message/1629

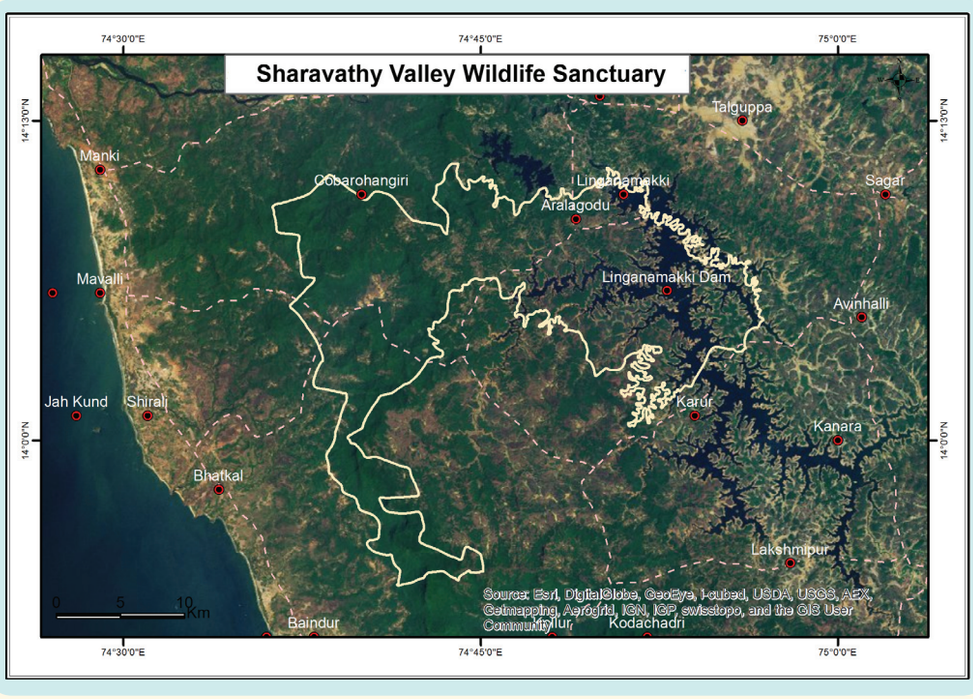
SHARAVATHY VALLEY WILDLIFE SANCTUARY

IN-KA-32

IBA Site Code	: IN-KA-32	**Altitude**	: 94–1,102 msl
Administrative Region (State)	: Karnataka	**Rainfall**	: 4,500 mm
District	: Shimoga	**Temperature**	: 15 °C to 38 °C
Coordinates	: 14° 09' 28" N, 74° 53' 16" E	**Biogeographic Zone**	: Western Ghats
Ownership	: State	**Habitats**	: Tropical Semi-evergreen, Tropical Wet Evergreen, Tropical Moist Deciduous Forests
Area	: 43,123 ha		

IBA CRITERIA: A1 (Threatened species), A2 (Endemic Bird Area 123: Western Ghats), A3 (Biome 10: Indian Peninsula Tropical Moist Forest)

PROTECTION STATUS: Wildlife Sanctuary, established April, 1974.



GENERAL DESCRIPTION

The Sharavathy Valley Wildlife Sanctuary lies in the Western Ghats. It has an area of 43,123 ha, with 12,363 ha (and an additional 507 ha of islands) in the eastern part of the sanctuary occupied by Linganamakki Reservoir, serving a dam on the Sharavathy river, constructed in 1964–1965. The remaining area has been divided into a core zone (7,433 ha), buffer zone (17,067 ha), and tourism zone (5,753 ha). The sanctuary shares its southwestern boundary with the Mookambika Wildlife Sanctuary (Manjrekar 2000). The spectacular Jog Falls, where water from the Sharavathy river falls from a height of almost 300 m, is present on the northern boundary of the sanctuary. Sharavathy WLS can be reached by road or rail from Bengaluru (=Bangalore) to Talguppa (352 km) via Tumkur, Shimoga, and Sagar, then another 7 km by road to the sanctuary.

The sanctuary has mainly Tropical Evergreen, Semi-evergreen, and some Tropical Moist Deciduous Forests. The top canopy of the evergreen forests is made up of *Dipterocarpus indicus*, *Calophyllum tomentosum*, and *Machilus macrantha*. The middle storey has, among others, *Caryota urens* and *Aporosa lindleyana*. In the semi-evergreen and moist deciduous forests, common species include *Lagerstroemia lanceolata*, *Hopea parviflora*, *Dalbergia latifolia*, *Dillenia pentagyna*, *Careya arborea*, *Emblica officinalis*, *Randia* sp., *Terminalia* sp., and *Vitex* sp.

AVIFAUNA

Barve & Warrier (2013) conducted surveys intermittently between November, 2008 and March, 2010, and reported 215 species of birds, including 15 endemics. The maximum species were recorded by them in the Sagar area (190),

AMEEN AHMAD

The spectacular Jog Falls, where water from the Sharavathy river falls from a height of almost 300 m, are present on the northern boundary of the sanctuary. Fifteen endemic birds of the Western Ghats are reported from this IBA

followed by Bachhodi (141), and Kodachadri (118).

Although White-rumped Vulture *Gyps bengalensis* was reported earlier, Barve & Warrier (2013) have not seen it, further proving the unfortunate decline of this bird, even in protected areas. However, they recorded the Endangered Egyptian Vulture *Neophron percnopterus*.

The Sri Lanka Frogmouth *Batrachostomus moniliger*, a bird of the Western Ghats and Sri Lanka, was recorded by Barve (2010) only from Bachhodi and Sagar but later Barve & Warrier (2013) reported it in most of the suitable habitats and found it to be a common nocturnal bird of this IBA. The Nilgiri Wood-pigeon *Columba elphinstonii* is seen in the Kodachadri and Hosanagara areas of the Sharavathy valley.

The Malabar Pied Hornbill *Anthracoceros coronatus*, a Near Threatened species, occurs in moist deciduous and riverine forests, and wherever it occurs, it is locally common. It was regularly seen in Bachhodi by Barve & Warrier (2013). They found that up to 25 birds roosted regularly along the river courses. However, Barve & Warrier (2013) could not find the Great Pied Hornbill *Buceros bicornis*, a bird widely distributed in the Western Ghats (and other forests in India). It is found in good numbers to the north (Dandeli, an IBA) and south of Sharavathy (Mookambika). Even in Sharavathy, they found good habitat of this species.

Another interesting sighting of this survey was that of Vigor's Sunbird *Aethopyga vigorsii*. Rasmussen & Anderton (2005) consider this a species of the northern Western Ghats. However, it has been recorded from northern Karnataka, and photographed in Dandeli Wildlife Sanctuary by Mohan Raj in 2006. Its presence in Sharavathy further proves that it is more widely distributed.

OTHER KEY FAUNA

Sharavathy Valley WLS has a good population of Gaur *Bos gaurus*, and three to four groups of Lion-tailed Macaque *Macaca silenus*. Other mammals include Tiger *Panthera tigris*, Leopard *P. pardus*, Wild Dog *Cuon alpinus*, Golden Jackal *Canis aureus*, Bonnet Macaque *Macaca radiata*, South-western or Black-footed Grey Langur *Semnopithecus hypoleucos*, Wild Boar *Sus scrofa*, Spotted Deer *Axis axis*, Barking Deer *Muntiacus muntjak*, Mouse Deer *Moschiola indica*, Common Otter *Lutra lutra*, and Porcupine *Hystrix indica*. Reptiles of the sanctuary include King Cobra *Ophiophagus hannah* and Common Cobra *Naja naja*, Indian Python *Python molurus*, Rat Snake *Ptyas mucosus*, Crocodile *Crocodylus palustris*, and Monitor Lizard *Varanus bengalensis*.

CRITICALLY ENDANGERED	
White-rumped Vulture (old record)	*Gyps bengalensis*
ENDANGERED	
Egyptian Vulture	*Neophron percnopterus*
VULNERABLE	
Nilgiri Wood-pigeon	*Columba elphinstonii*
NEAR THREATENED	
Oriental Darter	*Anhinga melangaster*
Malabar Pied Hornbill	*Anthracoceros coronatus*
Grey-headed Bulbul	*Microtarsus priocephalus*
Nilgiri Flycatcher	*Eumyias albicaudatus*
ENDEMIC BIRD AREA 123: WESTERN GHATS	
Nilgiri Wood-pigeon	*Columba elphinstonii*
Malabar Parakeet	*Psittacula columboides*
Malabar Grey Hornbill	*Ocyceros griseus*
Malabar Barbet	*Psilopogon malabaricus*
Grey-headed Bulbul	*Microtarsus priocephalus*
Flame-throated Bulbul	*Pycnonotus gularis*
White-bellied Blue Flycatcher	*Cyornis pallipes*
Nilgiri Flycatcher	*Eumyias albicaudatus*
Malabar Woodshrike	*Tephrodornis sylvicola*
Indian Rufous Babbler	*Turdoides subrufus*
Vigor's Sunbird	*Aethopyga vigorsii*
Small Sunbird	*Leptocoma minima*
Nilgiri Flowerpecker	*Dicaeum concolor*
Malabar Starling	*Sturnia blythii*
White-bellied Treepie	*Dendrocitta leucogastra*
BIOME 10: INDIAN PENINSULA TROPICAL MOIST FOREST	
Jerdon's Nightjar	*Caprimulgus atripennis*
Indian Swiftlet	*Collocalia unicolor*
Malabar Trogon	*Harpactes fasciatus*
Malabar Pied Hornbill	*Anthracoceros coronatus*
White-cheeked Barbet	*Megalaima viridis*
Malabar Barbet	*Psilopogon malabaricus*
Yellow-browed Bulbul	*Acritillas indica*
Malabar Whistling-thrush	*Myophonus horsfieldii*
Indian Scimitar-babbler	*Pomatorhinus horsfieldii*
Dark-fronted Babbler	*Rhopocichla atriceps*
Black-throated Munia	*Lonchura kelaarti*

LAND USE

- Tourism and recreation
- Nature conservation and research

THREATS AND CONSERVATION ISSUES

- Grazing
- Hydroelectric project
- Encroachment
- Poaching
- Fuel wood collection

The IBA suffers from numerous problems such as encroachment and conversion of forests into paddyfields and arecanut plantations.

Another major problem affecting the forest habitat is the Linganamakki Reservoir, which occupies almost half of this sanctuary. A considerable patch of the forest has been broken into many islands by the reservoir, with numerous small islands. There are about 121 villages within the sanctuary, with grazing rights due to which biotic pressure is very high in the eastern and northern portions.

PUTTURAJU K.

Small Sunbird *Leptocoma minima* is endemic to the Western Ghats. It is quite common in this IBA

The biggest threat is from the Sharavathy Valley Tail Race Hydroelectric Project that would destroy 700 ha of prime evergreen forest, of which about 100 ha lie within the sanctuary. Even if most of the forest is technically outside the notified sanctuary, it has great biological value. The actual damage to the green cover would be much more than officially admitted, considering the corruption such projects generally entail. The project is to be located near Gersoppa on the Hanovar-Bengaluru state highway, 2 km from Gersoppa town. The length of the dam will be *c.* 560 m and height *c.* 55 m from the deepest riverbed. The catchment area will be nearly 15,000 ha. The power house will work on continuous release of water from the main Sharavathy dam.

KEY CONTRIBUTOR

Ameen Ahmed

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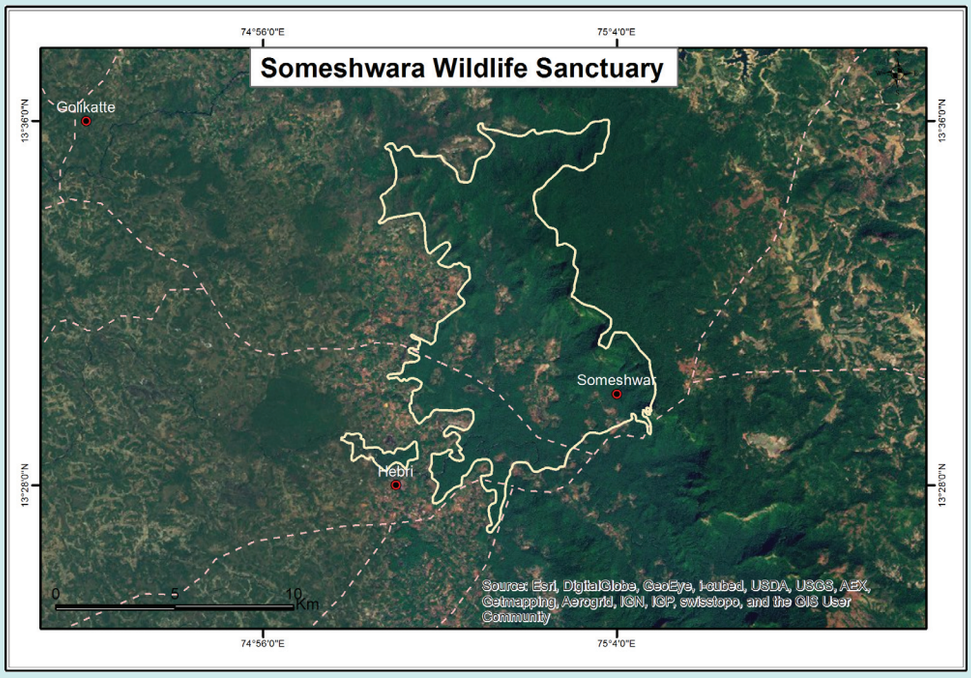
SOMESHWARA WILDLIFE SANCTUARY

IBA Site Code	: IN-K-33	**Altitude**	: 75–870 msl
Administrative Region (State)	: Karnataka	**Rainfall**	: 6,000 mm
District	: Udipi	**Temperature**	: 20 °C to 37 °C
Coordinates	: 13° 28' 23" N, 75° 03' 04" E	**Biogeographic Zone**	: Western Ghats
Ownership	: State	**Habitats**	: Tropical Dry Semi-evergreen and, Tropical Semi-evergreen Forests, Tropical Grassland
Area	: 8,840 ha		

IBA CRITERIA: A1 (Threatened species) A2 (Endemic Bird Area 123: Western Ghats) A3 (Biome 10: Indian Peninsula Tropical Moist Forest)

PROTECTION STATUS: Wildlife Sanctuary, established June, 1974.



GENERAL DESCRIPTION

Named after the presiding deity of the temple in the area, Someshwara, this sanctuary comprises two unconnected areas, the smaller being situated southwest of the larger part. A rich diversity of flora and fauna has been reported from this high-rainfall area. Kudremukh National Park lies to the southeast of the sanctuary, which can be approached by rail or road from Bengaluru (=Bangalore) to Shimoga (270 km), and then by road (95 km) via Tirthahalli and Agumbe, which is near the southeastern boundary of the sanctuary.

Someshwara WLS is not a well-known sanctuary, although it has all the features and biota of the Western Ghats. It is west of the popular tourist destination, Agumbe, just a treacherous half-hour climb away. The villages of Hebri and Sitanadi border it, and the River Sitanadi passes through it.

The Someshwara temple is visited by thousands of devotees every year. Besides, there are several smaller temples in and around this protected area.

The sanctuary has West Coast Tropical Evergreen, West Coast Tropical Semi-evergreen, Southern Secondary Moist Mixed Deciduous Forests, and Dry Grasslands (Champion & Seth 1968). Tree crown density of 40% and above is still found in much of the sanctuary (Lal *et al.* 1994). Some areas had earlier been clear felled for plantation, but this has now stopped. Apart from plantations of *Tectona grandis*, *Eucalyptus*, *Casuarina*, and Cashew, there are some mixed plantations of native species of *Bombax*, *Sterculia*, and *Ailanthus*.

VULNERABLE	
Lesser Adjutant	*Leptoptilos javanicus*
Asian Woollyneck	*Ciconia episcopus*
NEAR THREATENED	
Lesser Fish-eagle	*Icthyophaga humilis*
ENDEMIC BIRD AREA 123: WESTERN GHATS	
Malabar Parakeet	*Psittacula columboides*
Malabar Grey Hornbill	*Ocyceros griseus*
White-bellied Blue Flycatcher	*Cyornis pallipes*
Small Sunbird	*Leptocoma minima*
BIOME 10: INDIAN PENINSULA TROPICAL MOIST FOREST	
Malabar Pied Hornbill	*Anthracoceros coronatus*
Yellow-browed Bulbul	*Acritillas indica*
Loten's Sunbird	*Cinnyris lotenia*

AVIFAUNA

L. Shyamal & D. Rajkumar (*in litt.* 2002), during their bird surveys in March, 1995, identified 75 species in the Someshwara and Agumbe area, 58 species in Someshwara alone. Most of them were common species. N. Bhanutej (*in litt*. 2003) and Lal *et al*. (1994) have also prepared birdlists of this sanctuary. Based on the three checklists, two Threatened, one Near Threatened four restricted-range, and three Biome 10 species are present in this IBA.

The number of Threatened and restricted-range species of this Important Bird Area is rather limited, because not many researchers have ventured into this birdwatchers' paradise. Much more work needs to be done to identify the avifauna. This site was selected as an IBA due to its great potential to protect most of the restricted-range species of the Western Ghats.

OTHER KEY FAUNA

Someshwara is known for its population of the endemic Lion-tailed Macaque *Macaca silenus*. It also has the usual complement of predators: Tiger *Panthera tigris*, Leopard *P. pardus*, and Wild Dog *Cuon alpinus*, and herbivores Gaur *Bos gaurus*, Cheetal *Axis axis*, Sambar *Rusa unicolor*, and Barking Deer *Muntiacus muntjak*. Groves (2001) identified seven species of Langur from India. There is some doubt whether the langurs in the rainforests of Karnataka belong to *Semnopithecus dussumieri* (Southern Plains Grey Langur) or *S. hypoleucos* (Black-footed Grey Langur) (Ajith Kumar, *in litt*. 2003).

Not much is known about the reptiles, but the King Cobra *Ophiophagus hannah* is definitely present, along with Cobra *Naja naja*, Indian Rock Python *Python molurus*, and Indian Monitor Lizard *Varanus bengalensis* (Manjrekar 2000).

LAND USE

- Plantations
- Religious centre
- Nature conservation and research

THREATS AND CONSERVATION ISSUES

- Forest fires set by locals
- Timber extraction
- Fodder extraction
- Overgrazing

This small sanctuary is beset with problems, all anthropogenic. Villagers, both inside and from adjoining areas, are allowed to graze their cattle free of charge throughout the sanctuary. Fodder extraction is permitted throughout the sanctuary, with no restrictions on quantity. Locals are also allowed to extract fuel wood. They have free access to the religious places located inside the sanctuary (Lal *et al*. 1994). This was the scenario about 10 years ago. We could not get independent information on whether these activities are still allowed or not. Expectedly, the official document (Manjrekar 2000) is silent on the issue.

KEY CONTRIBUTORS

J. Praveen, S. Subramanya.

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Groves, C. (2001) *Primate Taxonomy*. Smithsonian Institution Press, Washington, DC, USA.

Lal, R., Kothari, A., Pande, P., and Singh, S. (1994) *Directory of National Parks and Sanctuaries in Karnataka, Management Status and Profiles*. Indian Institute of Public Administration, New Delhi. Pp. 231.

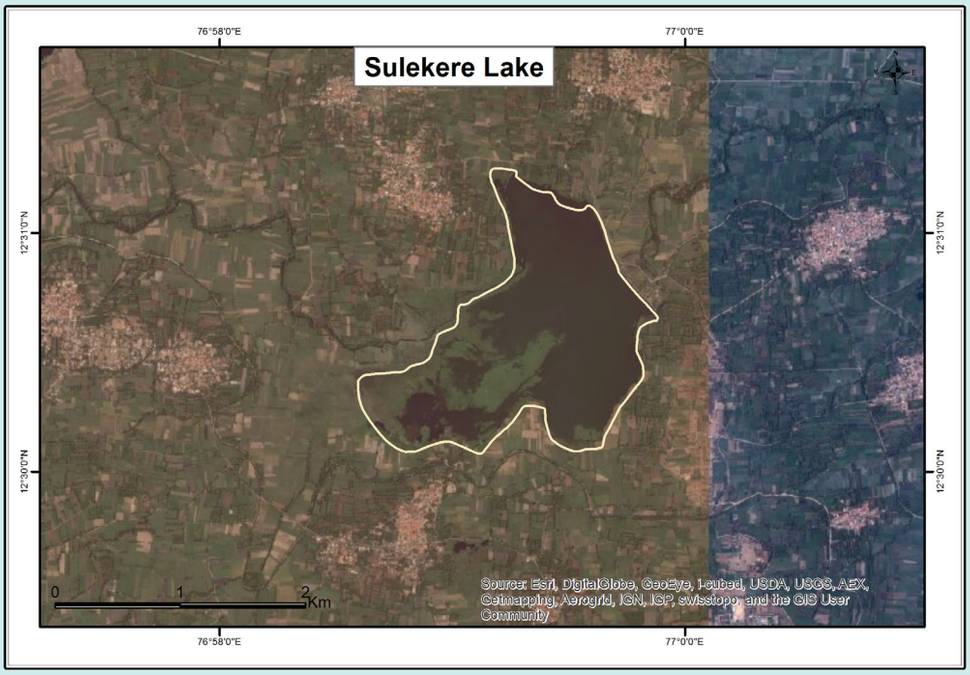
Manjrekar, N. (Ed.) (2000) *A Walk on the Wild Side*. Karnataka Forest Department, Wildlife Wing, Bangalore.

SULEKERE LAKE

IBA Site Code	:	IN-KA-34	**Area**	:	*c.* 500 ha
Administrative Region (State)	:	Karnataka	**Altitude**	:	400 msl
District	:	Mandya	**Rainfall**	:	500 mm
Coordinates	:	12° 40' 00" N, 76° 49' 60" E	**Temperature**	:	14 °C to 39 °C
			Biogeographic Zone	:	Deccan Peninsula
Ownership	:	State	**Habitats**	:	Freshwater Wetland

IBA CRITERIA: A4i (≥ 1% of biogeographic population), A4iii (≥20,000 waterbirds)

PROTECTION STATUS: Not officially protected.



GENERAL DESCRIPTION

This large irrigation tank is situated near Kanali village, 15 km southeast of Mandya town in Mandya district. The tank remains full throughout the year with canal water supplied from the Krishnarajasagar reservoir. Paddy and sugarcane fields surround the tank.

Based on Ramsar Criteria, Islam & Rahmani (2008) suggested that Sulekere Lake be considered as a Ramsar Site as it qualifies for Criteria 2 (wetland supports threatened ecological communities), Criteria 5 (wetland supports 20,000 or more waterbirds), and Criteria 6 (wetland regularly supports 1% of the individuals in a population of one species or subspecies). This IBA comes under Ramsar Wetland Type 6 (water storage impoundment).

AVIFAUNA

Sulekere Lake can boast of large congregations of Spot-billed Pelican *Pelecanus philippensis*, Northern Shoveller *Spatula clypeata*, Garganey *Querquedula querquedula*, Black-tailed Godwit *Limosa limosa*, Brown-headed Gull *Larus brunnicephalus* (for a few days), and Whiskered Tern *Chlidonias hybrida*. The thriving fishing industry sustains a large number of pelicans, as this is the nearest good source of food during the breeding season at Kokkare Bellur (an IBA), which is situated 13 km northwest of the lake. The fisheries also support large numbers of Whiskered Tern, up to 1,500 in some years, and Brown-headed Gull, up to 500–600 in 1994–1996 and up to 100 presently. The Northern Shoveller has always been the most abundant duck on the lake, with more than 11,000 birds counted in January, 2000, much above the 1% population threshold of 7,100 (Wetlands International 2012). Garganey sometimes congregate in enormous numbers prior to emigration in April, as this lake retains water when most others in the

ASAD R. RAHMANI

Sulekere Lake attracts more than 20,000 birds in some years, therefore its qualifies as an IBA on the basis of A4iii criteria. Some species number more than their 1% population threshold, thus the site qualifies for A4i criteria also

NEAR THREATENED	
Oriental Darter	*Anhinga melanogaster*
Spot-billed Pelican	*Pelecanus philippensis*
Painted Stork	*Mycteria leucocephala*
Black-tailed Godwit	*Limosa limosa*

region are dry. Between 18,000–21,000 birds have been recorded in several years, six times the 1% threshold limit of 3,500. The site is a regular wintering ground for more than 5,000 Black-tailed Godwit, five times the threshold of 1,500 (Wetlands International 2012). Recently, 76 species of birds have been collectively reported by four birdwatchers who visited this wetland in 2013–2014 (http://ebird.org/ebird/hotspot/L2618683).

OTHER KEY FAUNA

Information not available.

THREATS AND CONSERVATION ISSUES

- Industrial waste
- Pesticides in the runoff from surrounding fields
- Overfishing
- Infestation by Water Hyacinth

A sugar factory located in Mandya town discharges molasses and other effluents into this lake. This has encouraged luxuriant growth of *Typha* and Water Hyacinth *Eichhornia crassipes* around the lake, that periodically reaches weed proportions when water levels are low.

KEY CONTRIBUTORS

K. Manu, A. Shivaprakash, S. Subramanya

KEY REFERENCES

Islam, M.Z. and Rahmani, A.R. (2008) *Potential and Existing Ramsar Sites in India*. Indian Bird Conservation Network: Bombay Natural History Society, BirdLife International and Royal Society for the Protection of Birds. Oxford University Press. Pp. 592.

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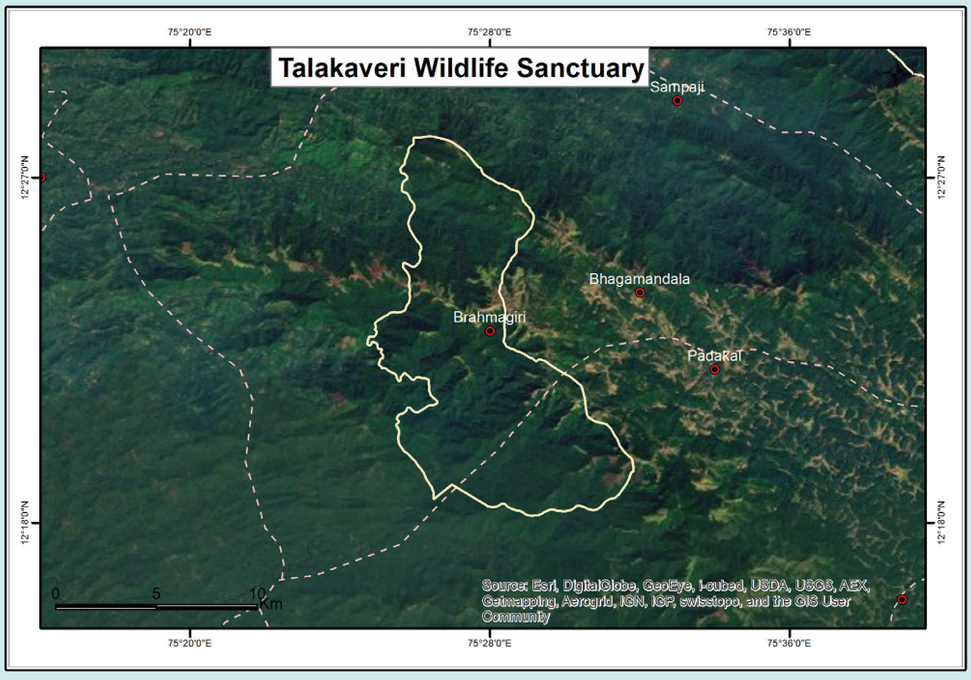
TALAKAVERI WILDLIFE SANCTUARY

IBA Site Code	:	IN-KA-35	**Altitude**	:	64–1,200 msl
Administrative Region (State)	:	Karnataka	**Rainfall**	:	6,500 mm
District	:	Kodagu	**Temperature**	:	10 °C to 35 °C
Coordinates	:	12° 24' 03" N, 75° 30' 53" E	**Biogeographic Zone**	:	Western Ghats
Ownership	:	State	**Habitats**	:	Tropical Dry Evergreen Forest, Tropical Semi-evergreen Forest, Tropical Moist Deciduous Forest
Area	:	10,501 ha			

IBA CRITERIA: A1 (Threatened species), A2 (Endemic Bird Area 123: Western Ghats) (Biome 10: Indian Peninsula Tropical Moist Forest)

PROTECTION STATUS: Wildlife Sanctuary, established 1987.



GENERAL DESCRIPTION

Talakaveri Wildlife Sanctuary, situated in the Western Ghats derives its name from the source of the Cauvery river (*tala* = head, Kaveri = Cauvery). This river source is also a pilgrimage centre (Lal *et al*. 1994).

The sanctuary is approachable by a 115 km road from Mangalore (via Puttur, Sulya, and Madikeri) to Bhagamandala, which is 8 km from the eastern boundary of the sanctuary. A few coffee and cardamom plantations are present within the sanctuary (Manjrekar 2000).

The sanctuary bears Tropical Evergreen Forest, Tropical Semi-evergreen Forest, and grasslands (Lal *et al.* 1994), the majority being Tropical Evergreen. Cane and bamboo are found in the lower storey, also shrubs *Strobilanthus* sp., *Leea sambuciana*, and *Pandanus* sp. (Manjrekar 2000).

AVIFAUNA

There is not much information in the literature on this interesting sanctuary, except for a popular article by Pittie (2000), who noted 62 species (A. Pittie, *in litt*. 2003), including seven species listed in Biome 10.

According A. Ahmad (*in litt*. 2002), this IBA has all the restricted-range species which can be expected here. Stattersfield *et al.* (1998) listed 16 restricted-range species in the Western Ghats Endemic Bird Area (EBA 123). After upgrading of many subspecies to full species by Rasmussen & Anderton (2005, 2012) and del Hoyo & Collar (2014), 26 species are endemic to the Western Ghats. Talakaveri has 11 of them (with one unconfirmed record). If detailed studies are done, more Western Ghats endemics are likely to be found in this IBA.

ENDANGERED	
Nilgiri Blue Robin (?)	*Myiomela major*
VULNERABLE	
Nilgiri Wood-pigeon	*Columba elphinstonii*
Indian Broad-tailed Grass-warbler	*Schoenicola platyurus*
NEAR THREATENED	
Nilgiri Flycatcher	*Eumyias albicaudatus*
Grey-headed Bulbul	*Microtarsus priocephalus*
ENDEMIC BIRD AREA 123: WESTERN GHATS	
Nilgiri Wood-pigeon	*Columba elphinstonii*
Malabar Parakeet	*Psittacula columboides*
Malabar Grey Hornbill	*Ocyceros griseus*
Grey-headed Bulbul	*Microtarsus priocephalus*
Nilgiri Blue Robin (?)	*Myiomela major*
Indian Rufous Babbler	*Turdoides subrufus*
IndianBroad-tailed Grass-warbler	*Schoenicola platyurus*
Nilgiri Flycatcher	*Eumyias albicaudatus*
White-bellied Blue Flycatcher	*Cyornis pallipes*
Small Sunbird	*Leptocoma minima*
White-bellied Treepie	*Dendrocitta leucogastra*

GARIMA BHATIA

Grey-headed Bulbul *Pycnonotus priocephalus* is a Near Threatened species and one of the endemics of the Western Ghats. It is common in this IBA

OTHER KEY FAUNA

This sanctuary has almost all the larger mammals seen in the Western Ghats, such as Asiatic Elephant *Elephas maximus*, Tiger *Panthera tigris*, Leopard *P. pardus*, Wild Dog *Cuon alpinus*, Gaur *Bos gaurus*, Sloth Bear *Melursus ursinus*, Bonnet Macaque *Macaca radiata*, Lion-tailed Macaque *M. silenus*, Common Langur *Semnopithecus entellus*, Cheetal *Axis axis*, Sambar *Rusa unicolor*, Wild Boar *Sus scrofa*, Indian Giant Squirrel *Ratufa indica,* and Common Giant Flying Squirrel *Petaurista petaurista.* Smaller carnivores include the Golden Jackal *Canis aureus*, Mongoose *Herpestes edwardsii*, and wild cats. Indian Pangolin *Manis crassicaudata* is also reported. Reptile and amphibian fauna are also rich but an authentic checklist is not available.

LAND USE

- Plantations
- Tourism and recreation
- Nature conservation and research

THREATS AND CONSERVATION ISSUES

- Habitat alteration
- Tree felling
- Dynamite fishing in Cauvery river

Talakaveri Sanctuary contains five enclosures. All of these are closed canopy private forests, none of which have all-weather roads. Recently, the owner of the 500-acre enclosure at Kurudi has begun intensive farming, converting the forests into agricultural lands. For this and similar purposes, the owner of this enclosure has applied for permission to clear fell a large portion of the area. Though the Virajpet Territorial Division has given permission to fell the trees, the owner has been denied permission for transportation of the felled trees by the Wildlife Wing authorities. The sanctuary authorities feel that giving permission to transport the timber out of the sanctuary would mean repairing the existing forest roads, inflow of labour force, construction of permanent structures, and other similar activities. All this would have a serious negative impact on the pristine wildlife of this area.

KEY CONTRIBUTORS

Ameen Ahmed, J. Praveen.

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Stattersfield, A.J., Crosby, M.J., Long, A.J., and Wege, D.C. (1998) *Endemic Bird Areas of the World – Priorities for biodiversity conservation*. Birdlife Conservation Series, No. 7. Birdlife International, Cambridge, UK. Pp. 846.

ARABHITHITTU WILDLIFE SANCTUARY (Delisted)

IBA Site Code	:	IN-KA-36	**Area**	:	1,350 ha
Administrative Region (State)	:	Karnataka	**Altitude**	:	780–856 msl
District	:	Mysore	**Rainfall**	:	800 mm
Coordinates	:	12° 16' 00" N, 76° 25' 00" E	**Temperature**	:	17 °C to 35 °C
			Biogeographic Zone	:	Deccan Peninsula
Ownership	:	State	**Habitats**	:	Tropical Dry Deciduous Forest

IBA CRITERIA: A1 (Threatened species)

PROTECTION STATUS: Wildlife Sanctuary, establish in 1985.

(Suggest delisting this IBAs as the Trigger species is no more found there) (Map not available)

GENERAL DESCRIPTION

This Sanctuary was a game reserve till 1985, when it was declared a wildlife sanctuary. It is a small sanctuary with Tropical Dry Deciduous Forest and scrubland, surrounded by cultivation and grazing land. Two large plantations, one of *Eucalyptus* and the other of Sandalwood *Santalum album*, are also located within the Sanctuary. Arabhithittu could be approached from Mysore to Bilikere (25 km), and on to the Sanctuary's eastern edge (2.5 km), but entry to the forest is highly restricted due to the Ministry of Defence installations nearby. At the same time, their presence has also protected a large chunk of the forest from illegal felling and grazing.

The area is mainly covered with scrub forest. One large patch each of Eucalyptus and Sandalwood plantations is present in the area. Other tree species include *Ailanthus triphysa, Artocarpus heterophyllus, Anogeissus latifolia, Butea* sp., *Diospyros melanoxylon, Emblica officinalis* and *Acacia sundra* (Manjrekar, 2000).

AVIFAUNA

This site contained a good representative of Tropical Dry Deciduous Forest, including its avian community. The White-bellied Minivet *Pericrocotus erythropygius* is often seen here. About 51 species of birds have been recorded from the area (http://ebird.org/ebird/view/checklist?subID=S16111321).

This site was selected as an IBA due to the presence of vulnerable Yellow-throated Bulbul *Pycnonotus xantholaemus* but there is no recent record of this species, so we suggest to delist this IBA.

OTHER KEY FAUNA

The common predators of the Sanctuary include Leopard *Panthera pardus* and Indian Fox *Vulpes bengalensis*. The other mammals are Spotted Deer *Axis axis*, Wild Boar *Sus scrofa*, Porcupine *Hystrix indica*, Black-naped Hare *Lepus nigricollis* and Indian Grey Mongoose *Herpestes edwardsi*. The Monitor Lizard *Varanus indica* is among the reptiles widely present.

LAND USE

- Plantations
- Military activities

THREATS AND CONSERVATION ISSUES

- Grazing
- Illegal tree felling

KEY CONTRIBUTORS

Tejaswi Shivanand, S. Subramanya, Adavanne Shivaprakash.

KEY REFERENCES

Lal, R., Kothari, A., Pande, P. and Singh, S. (*Eds.*) (1994): *Directory of National Parks and Sanctuaries in Karnataka, Management Status and Profiles*. Center for Public Policy, Planning and Environmental Studies, Indian Institute of Public Administration, New Delhi.

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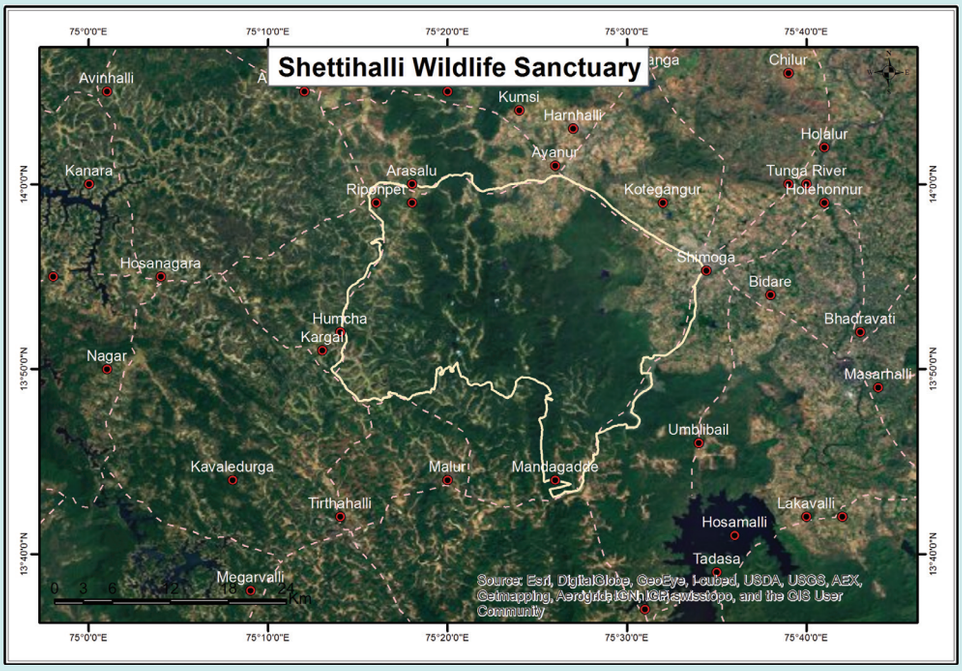
SHETTIHALLI WILDLIFE SANCTUARY

IN-KA-37

IBA Site Code	: IN-KA-37	**Altitude**	: 600–1,031 msl
Administrative Region (State)	: Karnataka	**Rainfall**	: 2,000 mm
District	: Shimoga	**Temperature**	: 15 °C to 38 °C
Coordinates	: 13° 52’ 00” N, 75° 22’ 60” E	**Biogeographic Zone**	: Western Ghats
Ownership	: State	**Habitats**	: Tropical Semi-evergreen Forest, Tropical Deciduous Forest
Area	: 39,560 ha		

IBA CRITERIA: A1 (Threatened species), A3 (Biome 11: Indo-Malayan Tropical Dry Zone), Data Deficient

PROTECTION STATUS: Wildlife Sanctuary, established November, 1974. IBA in danger.



GENERAL DESCRIPTION

Shettihalli WLS is situated in Shimoga district, 270 km from Benguluru. The northeastern part of the sanctuary has a 91 ha Tiger-Lion Safari, created on June 26, 1988 at Thyavarekappa, within which there is a small zoo. Mandagadde Bird Sanctuary, present on a small island in the River Tunga, is also part of this sanctuary.

Shettihalli Sanctuary comprises a core zone (10,060 ha), a buffer zone (23,740 ha) and a tourism zone (5,760 ha) (Manjrekar 2000). Despite its proximity to Shimoga town, it still retains forests ranging from Dry Deciduous to Semi-evergreen. There are a large number of human settlements inside the sanctuary, mainly those of families that were displaced by the construction of the Sharavathy Dam in the 1960s.

The sanctuary has mostly Dry and Moist Deciduous Forests in the eastern and central parts. Towards the west, with an increase in rainfall, there are Semi-evergreen Forests. Trees of the deciduous parts include *Terminalia tomentosa*, *T. bellirica*, *Gmelina arborea*, *Tectona grandis*, *Anogeissus latifolia*, *Lagerstroemia lanceolata*, *Wrightia tinctoria*, *Cassia fistula*, and *Emblica officinalis*. In the Moist Deciduous Forest, species such as *Haldina cordifolia*, *Xylia xylocarpa*, *Grewia tilaefolia*, and *Kydia calycina* occur. Bamboos *Dendrocalamus strictus* and *Bambusa arundinacea* are also typical of these forests. Semi-evergreen forests are represented by species of *Dipterocarpus*, *Michelia*, *Hopea*, *Schleichera*, and *Bambusa*. Plantations of *Acacia auriculiformis*, *Tectona grandis*, and *Grevillea robusta* exist in the sanctuary.

AVIFAUNA

No work has been done on the avifauna of this IBA site, but it would have many restricted-range, globally Threatened, and biome-restricted species. Presently, it is considered Data Deficient. The site is being listed as an

BHASMANG MEHTA

This is a site for which the IBA status needs to be reconsidered. In 2004, it was included because good forest was still found in patches. Conditions seem to have deteriorated due to intensive biotic pressures, therefore it could be dropped from the list. Only common birds such as Indian Grey Hornbill are now found in this IBA

CRITICALLY ENDANGERED	
White-rumped Vulture (old record)	*Gyps bengalensis*
BIOME 11: INDO-MALAYAN TROPICAL DRY ZONE	
Common Indian Nightjar	*Caprimulgus asiaticus*
Indian Grey Hornbill	*Ocyceros birostris*
Brahminy Starling	*Sturnus pagodarum*
White-bellied Drongo	*Dicrurus caerulescens*

IBA only because good forest was found in patches despite tremendous biotic pressures.

OTHER KEY FAUNA

The mammalian fauna of the sanctuary includes Tiger *Panthera tigris*, Leopard *P. pardus*, Wild Dog *Cuon alpinus*, Golden Jackal *Canis aureus*, Gaur *Bos gaurus,* Sloth Bear *Melursus ursinus*, Bonnet Macaque *Macaca radiata*, Mongoose *Herpestes edwardsi*, Asiatic Elephant *Elephas maximus*, Wild Boar *Sus scrofa*, Spotted Deer *Axis axis*, Grey Langur *Semnopithecus entellus,* Indian Giant Squirrel *Ratufa indica*, Common Giant Flying Squirrel *Petaurista petaurista*, and Indian Pangolin *Manis indica*. King Cobra *Ophiophagus hannah*, Indian Rock Python *Python molurus*, Rat Snake *Ptyas mucosus*, and Marsh Crocodile *Crocodylus palustris* are among the reptiles that inhabit the IBA.

LAND USE

- Plantations
- Tourism and recreation
- Nature conservation and research

THREATS AND CONSERVATION ISSUES

- Human settlements
- National Highway

Shettihalli is among the most disturbed sanctuaries in Karnataka. Not only are there 112 villages within, there are a number of encroachments within its boundaries. Land measuring 200 ha has been taken over by Gajanur Dam, 30 ha is lost to roads, and there are many power transmission lines within the sanctuary. The Sholapur-Mangalore National Highway passes through Shettihalli WLS and the road has lately been upgraded to a four-lane highway.

KEY CONTRIBUTOR

Ameen Ahmed

KEY REFERENCE

Manjrekar, N. (Ed.) (2000): *A Walk on the Wild Side*. Karnataka Forest Department, Wildlife Wing.

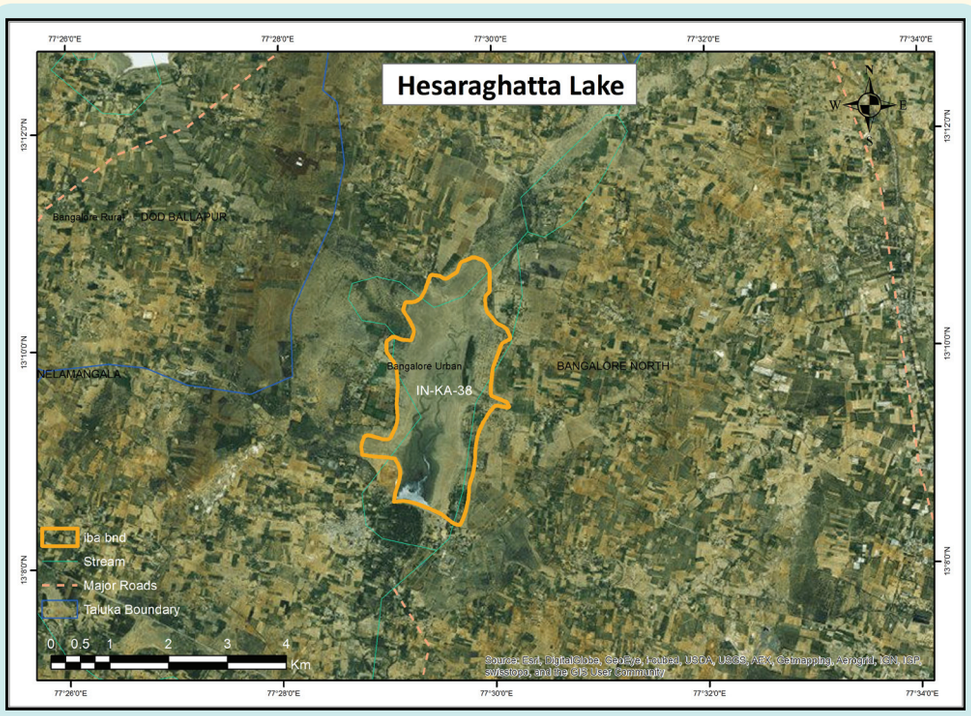
HESARAGHATTA LAKE

IN-KA-38

IBA Site Code	:	IN-KA-38	**Area**	:	450 ha
Administrative Region (State)	:	Karnataka	**Altitude**	:	*c.* 870 msl
District	:	Bengaluru	**Rainfall**	:	860 mm
Coordinates	:	13° 09' 33.8" N, 77° 29' 20.1" E	**Temperature**	:	15.4 °C to 36 °C
Ownership	:	Government, Private	**Biogeographic Zone**	:	Deccan Peninsula
			Habitats	:	Freshwater Lake, Grassland

IBA CRITERIA: A1 (Threatened species)

PROTECTION STATUS: Not officially protected.



GENERAL DESCRIPTION

Hesaraghatta Lake is a 450 hectare manmade waterbody, created in 1894 by damming the River Arkavathi. The lake was a source of water for Bengaluru city till the early 1990s. It is administered by the Irrigation Department of the Government of Karnataka. The lake is located 35 km from Bengaluru city. The periphery of the lake is mainly scrubland, interspersed with grassland. Towards the north-west part of the Hesaraghatta bund, adjoining Nrityagram and the Institute of Film and Television is a vast grassland. On the east of the bund is largely a lightly wooded area and fisheries research institutes. The western side of the bund houses Animal Husbandry Institute and Hesaraghatta village, which extends to the southern side of the lake.

AVIFAUNA

When the lake had water, many open-water dependent migrants such as the Northern Shoveller *Spatula clypeata*, Northern Pintail *Mereca acuta*, Garganey *Querquedula querquedula*, Common Teal *Anas crecca*, Eurasian Wigeon *Mareca penelope*, and Common Pochard *Aythya ferina*, and waders Common Redshank *Tringa totanus*, Common Greenshank *T. nebularia*, Wood Sandpiper *T. glareola*, Common Sandpiper *Actitis hypoleucos*, Black-winged Stilt *Himantopus himantopus*, and Little Ringed Plover *Charadrius dubius* were found here. As the lake began drying, only the birds which prefer grasslands or marginal wetlands came here. During winter, the Western Marsh Harrier *Circus aeruginosus*, Pallid Harrier *C. macrourus*, Pied Harrier *C. melanoleucos*, and Montagu's Harrier *C. pygargus* are known to roost in the grasslands.

Indian Spotted Eagle *Clanga hastata* and Greater Spotted Eagle *Clanga clanga* are frequently reported from the area. Egyptian Vulture *Neophron percnopterus* is frequently seen

NIRAV BHATT

Lesser Florican *Sypheotides indicus* was sighted in Hesarghatta grassland after almost 100 years. However, the grassland is under tremendous biotic pressure. Both the wetland and grassland need urgent protection

ENDANGERED	
Egyptian Vulture	*Neophron percnopterus*
Lesser Florican	*Sypheotides indicus*
VULNERABLE	
Greater Spotted Eagle	*Clanga clanga*
Indian Spotted Eagle	*Clanga hastata*
Asian Woollyneck	*Ciconia episcopus*
NEAR THREATENED	
Painted Stork	*Mycteria leucocephala*
Black-headed Ibis	*Threskiornis melanocephalus*
Pallid Harrier	*Circus macrourus*
Himalayan Griffon (?)	*Gyps himalayensis*
Black-tailed Godwit	*Limosa limosa*
River Tern	*Sterna aurantia*
Alexandrine Parakeet	*Psittacula eupatria*
European Roller	*Coracias garrulus*

as well. There have been occasions when up to nine different species of raptors and up to twenty different individuals were seen in a short span of a few hours. Egyptian Vultures were seen roosting in large numbers, as many as a hundred of them. Himalayan Griffon *Gyps himalayensis* has also been recorded in the area (Subramanya 2013). European Roller *Coracias garrulus* is seen on passage on several occasions.

Among the other avifauna commonly found here are several raptors, including the scarce Red-headed Falcon *Falco chicquera*, several species of cuckoos, prinias, pipits, warblers, buntings, larks, bee-eaters, drongos, chats, and Indian Peafowl *Pavo cristatus* (Subramanya 2013).

Hesaraghatta also seems to attract quite a few occasional visitors like Red-throated Pipit *Anthus cervinus*, Amur Falcon *Falco amurensis*, Lesser Kestrel *F. naumanni*, Peregrine Falcon *F. peregrinus*, and Eurasian Hobby *F.*

subbuteo. In December 2011, the Endangered Lesser Florican *Sypheotides indicus*, which largely prefers tall grasslands, was sighted after a century at the site (Raghavendra 2012, Subramanya 2012).

A large *Gyps* vulture, possibly the Near Threatened Himalayan Griffon *Gyps himalayensis*, was sighted and photographed in flight on February 10, 2013 (Praveen *et al*. 2013).

To date, more than 200 species have been recorded on www.ebird.org to date from the area.

OTHER KEY FAUNA

The following mammals are found in this IBA: Leopard *Panthera pardus*, Slender Loris *Loris lydekkerianus*, Common Mongoose *Herpestes edwardsii*, Golden Jackal *Canis aureus*, Indian Fox *Vulpes bengalensis*, Palm Squirrel *Funambulus palmarum*, Indian Mole Rat *Bandicota bengalensis*, Black-naped Hare *Lepus nigricollis*, and Wild Boar *Sus scrofa*.

LAND USE

- Irrigation
- Cultivation
- Cattle grazing

THREATS AND CONSERVATION ISSUES

- Development
- Overzealous photography
- Sand mining
- Firewood collection
- Commercial fishing

A public interest litigation filed by concerned civic bodies against diversion and desecration of Hesaraghatta habitat is pending in the High Court of Karnataka.

Activities of a large number of photographers have led to considerable damage to the grassland habitat and disturbance to birds, which are intensely pursued by these photographers (Seshadri *et al*. 2013)

In an effort to increase green cover, government bodies recently took up tree plantation all over the periphery of the lake and also in the unique large grassland near Nrityagram, threatening the fragile grassland and scrubland habitat. This action has been halted due to public pressure and litigation.

The dry lake bed has been extensively mined for sand, both for brick making and construction purposes.

KEY CONTRIBUTORS

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Raghavendra, M. (2012) Occurrence of Lesser Florican *Sypheotides indica* in Bangalore, Karnataka, India. *Indian BIRDS* 7:(5) 140–142.

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Subramanya, S. (2013) *Status survey of Hessarghatta Grasslands*. Report submitted to The Karnataka Biodiversity Board, Bangalore.

Links

Hesaraghatta Satellite Image:
www.google.co.in/maps/@13.1445928,77.4792738,6688m/data=!3m1!e3?hl=en

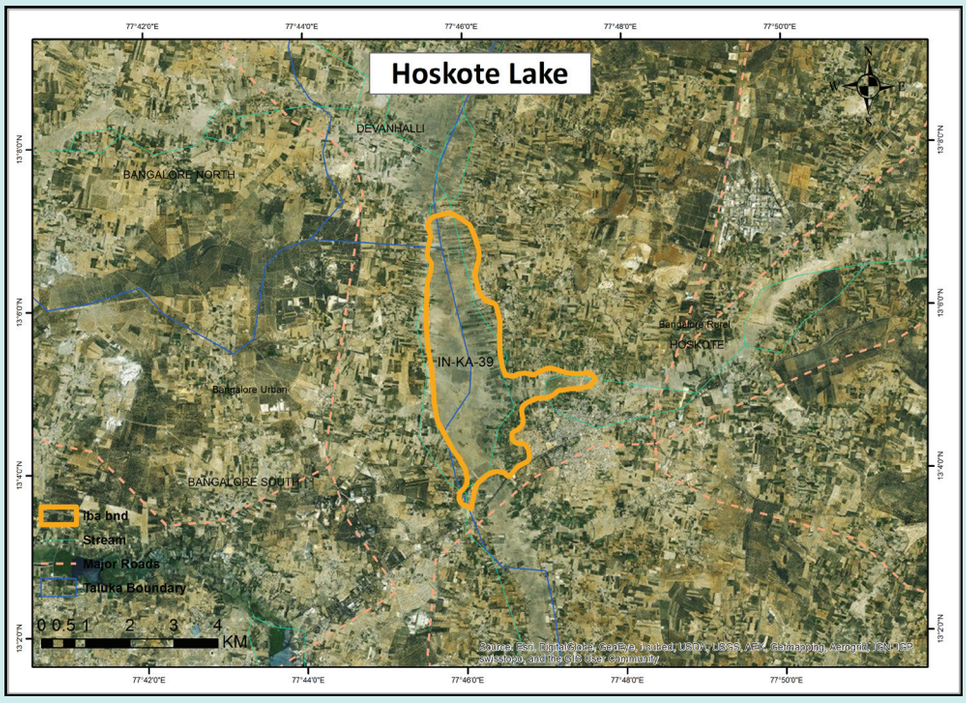
Articles highlighting threats to Hesaraghatta Ecology:
http://www.conservationindia.org/gallery/killing-a-grassland-hessarghatta-bangalore
http://www.conservationindia.org/gallery/kannada-film-industry-continues-to-destroy-hesaraghatta-grassland
http://www.conservationindia.org/wp-content/files_mf/small_Hesaraghatta-Photographers.pdf

HOSKOTE KERE

IBA Site Code	:	IN-KA-39	**Altitude**	:	860 msl
Administrative Region (State)	:	Karnataka	**Rainfall**	:	970 mm
District	:	Bangalore Rural	**Temperature**	:	15 °C to 34 °C
Coordinates	:	13° 4' 59" N, 77° 46' 3" E	**Biogeographic Zone**	:	Deccan Peninsula
Ownership	:	Private, State	**Habitats**	:	Freshwater Reservoir and Swamp, Seasonal Marsh, Tropical Secondary Scrub
Area	:	400 ha			

IBA CRITERIA: A1 (Threatened species)

PROTECTION STATUS: Not officially protected.



GENERAL DESCRIPTION

Hosakote or Hoskote Kere [=Lake] was created by an artificial bund on one of the tributaries of Ponnaiyar, i.e. Dakshina Pinakini river that originates further north in Nandi Hills. The lake was once surrounded on all sides by agricultural fields. Diversion of water from its main source, development activities in the catchment area, and agriculture upstream converted parts of this once perennial lake into dry terrain. A decade ago, the water levels came down so low that the entire lake became dry. However, in recent years, there has been an influx of water that sustains its level throughout the year by artificially pumping water from a slightly lower Yellamalappa Shetty Kere.

The northern part of the lake is still a large dry land with meadows and villages around it. Some parts are being converted to agriculture. There are extensive reed beds adjoining the water. The State Forest Department has recently planted several saplings on the lake bed in an attempt to convert the land into a woodland, thereby destroying parts of the meadows. The western shores of the lake are used for paragliding and by aeromodelling clubs.

Not much information is available on the vegetation of this wetland area which lies within 20 km from Bengaluru metropolis.

AVIFAUNA

Prior to the mid 1990s, the lake had a vast waterspread and supported large congregations of waterfowl. A total of 180 species of birds have been reported through eBird (www.ebird.org), and several more are not reported formally. This IBA site was once famous for several thousands ducks including Northern Pintail *Anas acuta*, Northern Shoveller *Spatula clypeata*, and Garganey *Querquedula querquedula* that congregate here during winter: in January 1990, ducks

ENDANGERED	
Egyptian Vulture	*Neophron percnopterus*
VULNERABLE	
Greater Spotted Eagle	*Clanga clanga*
Indian Spotted Eagle	*Clanga hastata*
Asian Woollyneck	*Ciconia episcopus*
NEAR THREATENED	
Oriental Darter	*Anhinga melanogaster*
Painted Stork	*Mycteria leucocephala*
Black-headed Ibis	*Threskiornis melanocephalus*
Spot-billed Pelican	*Pelecanus philippensis*
River Tern	*Sterna aurantia*
Black-tailed Godwit	*Limosa limosa*
Pallid Harrier	*Circus macrourus*
Red-headed Falcon	*Falco chicquera*

in excess of 24,000 were recorded at the site. During the period between 2000 and 2010, water that collected in this lake was meagre for any kind of waterfowl. Since then, water levels have steadily increased, bringing back the waterfowl to a few thousands during winter. The lake is an important site for Indian Spotted Eagle *Clanga hastata* that probably breeds in the vicinity, while Greater Spotted Eagle *Clanga clanga* has been observed to winter here regularly. A few Asian Woollyneck *Ciconia episcopus* (maximum 20), along with White Stork *C. ciconia*, Asian Openbill *Anastomus oscitans*, and Painted Stork *Mycteria leucocephala* are seen during winter. There has been a steady increase in the number of Spot-billed Pelicans *Pelecanus philippensis* around Bengaluru, and this tank also attracts good numbers. Up to 100 birds have been recorded. Egyptian Vulture *Neophron percnopterus* is generally rare here, compared to other favoured spots in north and west Bengaluru. Many wetland birds like Black-winged Stilt *Himantopus himantopus* and Little Grebe *Tachybaptus ruficollis* breed here during the monsoon. In summary, one Endangered, three Vulnerable, and eight Near Threatened species have been recorded from this IBA (BirdLife International 2001).

Hoskote, in its present form, does not fit the IBA criteria of congregations usually applied for waterfowl; it probably hosts at some point more than 1% biogeographic population of Spot-billed Pelican (>100), Glossy Ibis (>250), Black-headed Ibis (>250), Garganey (>2,500), and Black-winged Stilt (>1,700). But, being a regular breeding/wintering area for several Vulnerable and Near Threatened species (Birdlife International 2014), this site qualifies as an IBA under criteria A1. Further, increased protection and maintenance of water levels in Hoskote will surely bring back its rich avifauna, and duck numbers will steadily increase, making it an important staging point for long distance migrants.

OTHER KEY FAUNA

Being a wetland, the number of terrestrial mammals here is rather limited, except for Golden Jackal *Canis aureus* and Common Mongoose *Herpestes edwardsi*. Though naturalists studying other taxa also visit this wetland sparingly, there

SWAROOP BHARADWAJ

A total of 163 species of birds have been reported from Hoskote Kere. In 1990, more than 24,000 ducks were found but from 2000 to 2010, due to insufficient water, the duck population declined. But now sufficient water is present and bird number has increased again

BHASMANG MEHTA

Large numbers of waterbirds such as Black-tailed Godwit *Limosa limosa* are seen in the receding waters of the lake

has not been any inventory of butterflies, Odonates, fishes, amphibians, or reptiles.

LAND USE

- Agriculture
- Aquaculture, fisheries
- Tourism (paragliding, aeromodelling, bird photography)

THREATS AND CONSERVATION ISSUES

- Illegal land reclamation
- Fishing
- Encroachment by agricultural fields
- Pesticide pollution
- Poaching
- Paragliding and aeromodelling activities
- Mismanaged afforestation practices
- Eutrophication
- Excessive cattle grazing

At present, Hoskote Kere is not legally protected. Hunting waterbirds was prevalent here until a few years back. Since then, a sustained outreach programme and publicity by local conservationists have brought this to a stop. However, trapping is still goes on at the margins of the lake. Its water regime was once disrupted but is falling back in place. Proximity to Bengaluru city poses imminent threats like illegal land reclamation, waste disposal, and anthropogenic pressures from unregulated recreational activities. Farming on the lake margins is probably a lesser threat if it is limited to agriculture: if it is a stepping stone towards land conversion for construction, then the threat is serious. Farmers and fishermen resort to bursting crackers at times to scare away the birds like cormorants and pelicans which are perceived as pests.

Hoskote has the right characteristics to form a Community Conservation Reserve through a network of concerned local citizens. The fishermen who hold tenders from Karnataka Fisheries Development Corporation should be instructed by the municipality to limit disturbances to birds. Birdwatchers and photographers should be encouraged to use the bund as a vantage point. Sign boards describing the avifauna of the wetland should be erected and telescopes installed. Children from the neighbouring schools should be encouraged for birdwatching and education imparted on the importance of wetland ecosystems. Agriculture on the drying lake margins should be regulated and organic farming should be practised.

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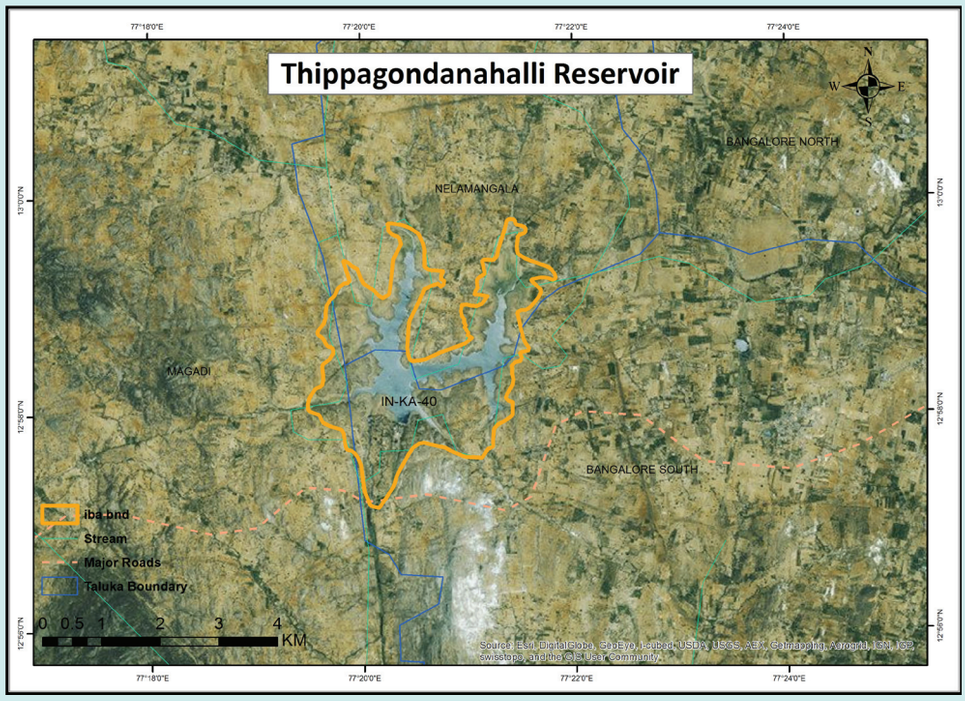
THIPPAGONDANAHALLI RESERVOIR

IN-KA-40

IBA Site Code	: IN-KA-40	**Area**	: 145 ha
Administrative Region (State)	: Karnataka	**Altitude**	: 780 msl
District	: Ramanagara	**Rainfall**	: 859 mm
Coordinates	: 12° 58' 34.4" N, 77° 20' 50.5" E	**Temperature**	: 15.4 °C to 36 °C
		Biogeographic Zone	: Deccan Peninsula
Ownership	: Pl add	**Habitats**	: Freshwater Reservoir

IBA CRITERIA: A1 (Threatened species)

PROTECTION STATUS: Not officially protected.



GENERAL DESCRIPTION

Thippagondanahalli Reservoir, also known as TG Halli Dam or Chamarajasagar, is located at the confluence of the Arkavathy and Kumudavathi rivers, 35 km west of Bengaluru (=Bangalore). It is used by the Bangalore Water Supply and Sewerage Board, Bengaluru as a major source of drinking water for western Bengaluru. The lake is a man-made reservoir, created by building a dam which was inaugurated in 1933.

TG Halli is surrounded by rocky hills and scrub forest. Savanadurga Reserve Forest is located southwest of the reservoir. There are agricultural fields and meadows around the lake. There are patches of reed beds around the reservoir. The area serves as a picnic spot too.

The habitat includes a large waterbody, with adjoining marshland, meadows, and scrub forest. This habitat diversity has created avifaunal diversity, and a day's birding can yield around 100 species.

AVIFAUNA

170 species of birds have been reported through the eBird online portal (www.ebird.org), and there may be many more. This proposed IBA is one of the sites around Bengaluru where Bar-headed Goose *Anser indicus* winters. Breeding of Tawny Eagle *Aquila rapax* is observed in TG Halli (Mike Prince, *pers. comm.*). Indian Spotted Eagle *Clanga hastata* is seen here regularly. Black-bellied Tern *Sterna acuticauda*, currently listed as Endangered by IUCN, was photographed at TG Halli by Ashwini Kumar Bhat on May 25, 2007.

Sighting of four Brown-headed Gull *Chroicocephalus* (= *Larus*) *brunnicephalus* was reported in February, 2013 from TG Halli. Sykes's Crested Lark *Galerida deva* can be sighted in the meadows surrounding the lake. Other

lark species found here are Ashy-crowned Sparrow-lark *Eremopterix griseus*, Jerdon's Bushlark *Mirafra affinis*, Indian Bushlark *Mirafra erythroptera*, Rufous-tailed Lark *Ammomanes phoenicura*, and Oriental Skylark *Alauda gulgula*. Small Pratincole *Glareola lactea* are regularly sighted here. A breeding colony of Grey Heron *Ardea cinerea* used to be seen on one of the large trees on the banks for several years.

ENDANGERED	
Egyptian Vulture	*Neophron percnopterus*
Black-bellied Tern	*Sterna acuticauda*
VULNERABLE	
Asian Woollyneck	*Ciconia episcopus*
Indian Spotted Eagle	*Clanga hastata*
NEAR THREATENED	
Spot-billed Pelican	*Pelecanus philippensis*
Painted Stork	*Mycteria leucocephala*
Black-headed Ibis	*Threskiornis melanocephalus*
Pallid Harrier	*Circus macrourus*
Great Thick-knee	*Esacus recurvirostris*
River Tern	*Sterna aurantia*
Alexandrine Parakeet	*Psittacula eupatria*

OTHER KEY FAUNA

Large mammals such as Asiatic Elephant *Elephas maximus*, Leopard *Panthera pardus*, Sloth Bear *Melursus ursinus*, and Golden Jackal *Canis aureus* are reported from the surrounding Savanadurga Reserve Forest. The site is a potential habitat for the secretive and Endangered Indian Pangolin *Manis crassicaudata*. Other small mammals such as Common Palm Civet *Paradoxurus hemaphroditus*, Jungle Cat *Felis chaus*, and Grey Slender Loris *Loris lydekkerianus* are found in the surrounding areas.

LAND USE

- Rapid conversion into farmland and urban habitats
- Aquaculture/fisheries
- Recreational activities
- Sand mining

THREATS AND CONSERVATION ISSUES

1. Rapid urbanization: A township was proposed to be built close to the reservoir. Sewage generated by the residential areas in the catchment area has polluted the water and the microhabitats. Because of these residential layouts, the water inflow pattern has altered, and the water level of the reservoir has been reduced from 17 m in 2006 to 5 m today.
2. Increasing industrial effluents: A study carried out by Indian Space Research Centre in association with Indian Resources Information & Management Technologies (IN-RIMT) revealed that there are a number of industries in the catchment area, whose effluents, along with underground leachate and sewage flow into the TGR, affecting the quality of water.
3. Illegal sand mining and quarrying in the nearby areas is a threat to the habitat.
4. Instances of poaching of small mammals and waterfowl in the surrounding areas have been reported.

KEY CONTRIBUTOR

Guruprasad Timmapur

KEY REFERENCES

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http://www.rainwaterharvesting.org_halli/tg_halli.htm
http://www.newindianexpress.com/cities/bangalore/aerticle179305.ece?.seervice=print
http://cseindia.org/node/2574
http://speciesguide.delhibird.net/internal/15/tawny_I.htm
http://www.indianaturwatch.net/displayimage.php?id=15939
Annotated Checklist, Karnataka, Praveen *et al* (2011)
NG Birds Yahoo Group
https://groups.yahoo.com/neo/groups/bngbirds/info

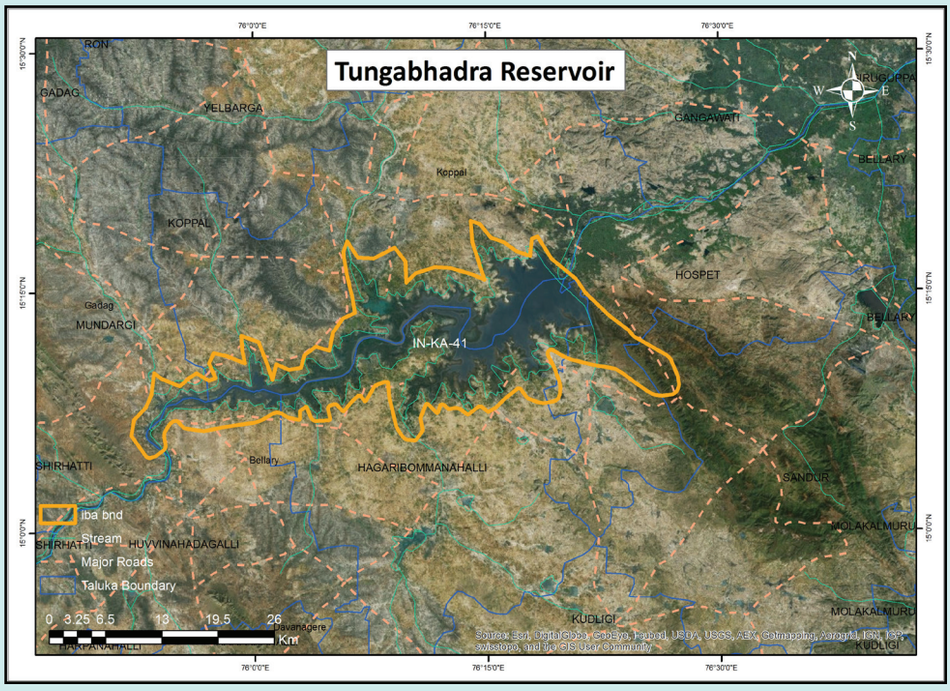
TUNGABHADRA RESERVOIR

IN-KA-41

IBA Site Code	:	IN-KA-41	**Area**	:	378 sq. km (reservoir and dam)
Administrative Region (State)	:	Karnataka	**Altitude**	:	498 msl
District	:	Bellary	**Rainfall**	:	501 mm
Coordinates	:	15° 15' 19" N, 76° 20' 10" E	**Temperature**	:	7 °C to 43 °C
Ownership	:	Karnataka, Andhra Pradesh, Telangana	**Biogeographic Zone**	:	Deccan Peninsula
			Habitats	:	Freshwater Reservoir

IBA CRITERIA: A1 (Threatened species), A4i (>1% population threshold), A4iii (Congregation of waterbirds)

PROTECTION STATUS: Not officially protected.



GENERAL DESCRIPTION

The construction of a huge dam across the Tungabhadra river near Hospet in Bellary district of Karnataka was started in 1945 and completed in 1953, resulting in the submergence of a large expanse of land, nearly 35,000 ha when the reservoir is full. It is popularly known as Tungabhadra Dam or T.B. Dam. The dam is now managed jointly by Karnataka, Andhra Pradesh, and Telangana states. This multipurpose dam provides water for irrigation of about 500,000 hectares, and ensures electricity generation, flood control, and drinking water supply.

The two tributaries Tunga and Bhadra originate in the Western Ghats and join at Kudagi near Shimoga, from where the Tungabhadra river flows a distance of 531 km to join River Krishna near Kurnool in Telangana. Along the river and the reservoir, this aquatic ecosystem provides food, shelter, and nesting grounds for many species of birds.

Though no natural forest is found around the backwaters of T.B. Dam, trees such as *Acacia nilotica*, *A. catechuoides*, *Azadirachta indica*, *Ficus racemosa*, *F. benghalensis*, *F. religiosa*, *Morinda coreia*, *Phoenix sylvestris*, *Millettia pinnata*, *Prosopis juliflora*, *Tamarindus indica*, and weeds like *Lantana* and *Ipomoea* spp. provide roosting and nesting space for birds.

AVIFAUNA

Apart from a number of resident birds, the vast backwaters of Tungabhadra Dam attract a large number of migratory waterfowl. In the beginning of winter, a huge congregation of birds is seen along the vast mud banks that run hundreds of kilometres. The small islands and mudflats provide shelter to migratory birds. A number of birds such as the River Tern *Sterna aurantia*, Black-winged Stilt *Himantopus himantopus*, Small Pratincole *Glareola*

lactea, Little Ringed Plover *Charadrius dubius*, Indian Courser *Cursorius coromandelicus,* Yellow-wattled Lapwing *Vanellus malabaricus*, Red-wattled Lapwing *Vanellus indicus*, and Indian Spot-billed Duck *Anas poecilorhyncha* breed in the backwaters of the dam.

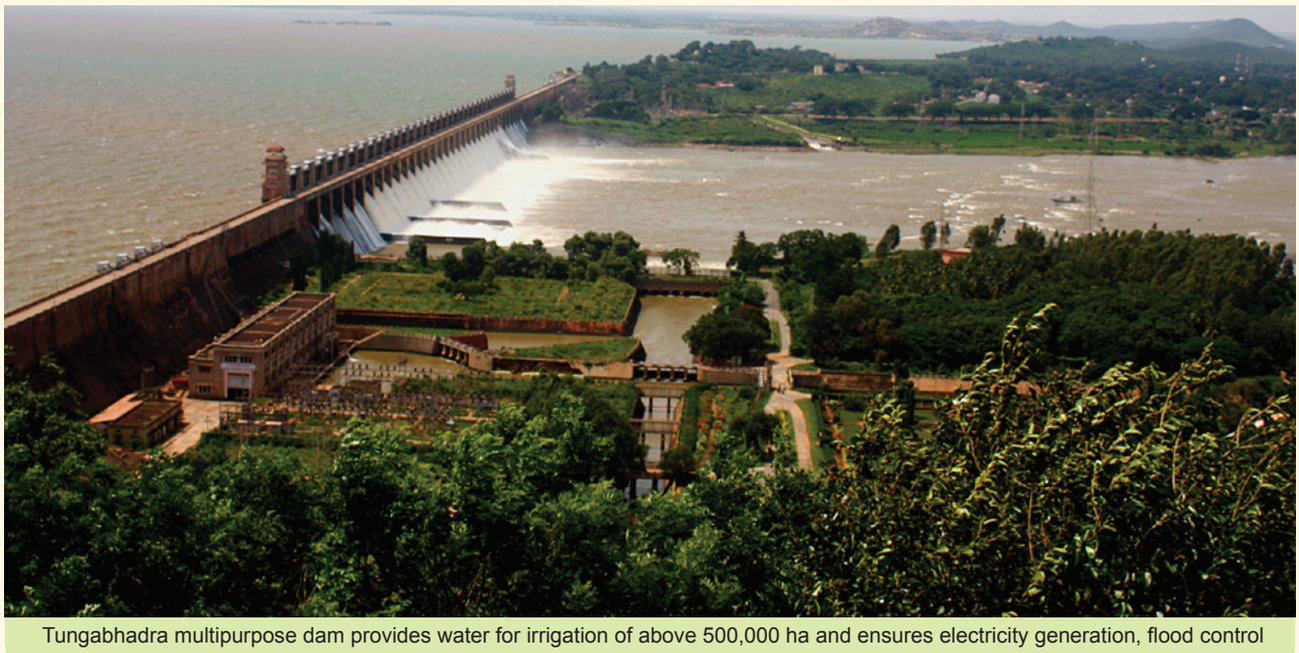
About 200 species of birds have been recorded in and around T.B. Dam reservoir and more than 20,000 waterbirds are found in winter in the reservoir. Some species occur in much greater numbers than their 1% population threshold, determined by Wetlands International (2012). For example, 1% threshold of Little Cormorant *Microcarbo niger* is 2,500, but sometimes more than 5,000 are found. Similarly, the 1% population threshold of Bar-headed Goose *Anser indicus* is 560 (Wetlands International 2012), and in Tungabhadra reservoir and surrounding areas, it is not unusual to see a few thousands of these birds. They mainly use the reservoir and islands for roosting, and forage in the surrounding crop fields. Other species found in much greater numbers than their 1% population threshold are Painted Stork *Mycteria leucocephala*, Asian Openbill *Anastomus oscitans*, Asian Woollyneck *Ciconia episcopus*, Black-headed Ibis *Threskiornis melanocephalus*, Red-naped Ibis *Pseudibis papillosa*, Northern Pintail *Anas acuta*, and Glossy Ibis *Plegadis falcinellus* (Samad Kottur, *pers. comm*. 2014).

The prominent resident birds are Painted Stork, Asian Openbill, Asian Woollyneck, Black-headed Ibis, Indian Spot-billed Duck, Lesser Whistling-duck *Dendrocygna javanica*, Knob-billed Duck *Sarkidiornis melanotos*, Cotton Pygmy-goose *Nettapus coromandelianus*, Little Cormorant, Indian Cormorant *Phalacrocorax fuscicollis*, Greater Cormorant *Phalacrocorax carbo*, Grey Heron *Ardea cinerea*, Purple Heron *A. purpurea*, Brahminy Kite *Haliastur indus*, Short-toed Eagle *Circaetus gallicus*, and Sykes's Lark *Galerida deva*.

Among the long distance migratory species, we have the Bar-headed Goose *Anser indicus*, Ruddy Shelduck *Tadorna ferruginea*, Northern Pintail *Anas acuta*, Northern Shoveller *Spatula clypeata*, Eurasian Wigeon *Anas penelope*, Garganey *Querquedula querquedula*, Whiskered Tern *Chlidonias hybrida*, Common Tern *Sterna hirundo*, Brown-headed Gull *Gelochelidon nilotica*, Oriental Pratincole *Glareola maldivarum*, Pacific Golden Plover *Pluvialis fulva*, Spotted Redshank *Tringa erythropus*, Common Greenshank *T. nebularia*, Common Redshank *T. totanus*, Marsh Sandpiper *T. stagnatilis*, Wood Sandpiper *T. glareola*, Common Sandpiper *Actitis hypoleucos*, Black-tailed Godwit *Limosa limosa*, Western Marsh Harrier *Circus aeruginosus*, Pallid Harrier *C. macrourus*, Montagu's Harrier *C. pygargus*, and Osprey *Pandion haliaetus*.

Red-headed Falcon *Falco chicquera* nests have not been found, but it probably breeds in the area as the surrounding habitat is quite suitable for it. For last two years, a nesting colony of Painted Stork, Grey Heron, Purple Heron, and Black-crowned Night-heron is found on Babool *Acacia*

ENDANGERED	
Black-bellied Tern	*Sterna acuticauda*
VULNERABLE	
Asian Woollyneck	*Ciconia episcopus*
NEAR THREATENED	
Oriental Darter	*Anhinga melanogaster*
Spot-billed Pelican	*Pelecanus philippensis*
Painted Stork	*Mycteria leucocephala*
Black-headed Ibis	*Threskiornis melanocephalus*
Red-headed Falcon	*Falco chicquera*
Pallid Harrier	*Circus macrourus*
Eurasian Curlew	*Numenius arquata*
Black-tailed Godwit	*Limosa limosa*
River Tern	*Sterna aurantia*



SAMAD KOTTUR

Tungabhadra multipurpose dam provides water for irrigation of above 500,000 ha and ensures electricity generation, flood control and drinking water supply. During the last 60 years, it has become a magnet for resident and migratory birds

SAMAD KOTTUR

About 200 species of birds have been recorded in and around Tungabhadra Dam reservoir and more than 20,000 waterbirds are found in winter in the reservoir. Receding water results in small pools which attract thousands of waders and ducks

nilotica in a Ankasamudra Lake in the backwaters of T.B. Dam (Samad Kottur, *pers. comm*. 2014).

Sometimes huge flocks consisting of hundreds of Spot-billed Pelican *Pelecanus philippensis* and Glossy Ibis are seen. These are local migrants. Black-bellied Tern *Sterna acuticauda* arrives in summer to breed on islets in the reservoir.

OTHER KEY FAUNA

Smooth-coated Otter *Lutrogale perspicillata*, Marsh Crocodile *Crocodylus palustris*, and Indian Narrow-headed Softshell Turtle *Chitra indica* are found in the reservoir.

LAND USE

- Agriculture
- Fisheries
- Electricity generation

The entire area is under the control of the Tungabhadra Board, which is run jointly by Karnataka, Andhra Pradesh, and Telangana. All along the backwaters, the water is used to irrigate land to grow paddy, sugar cane, fruits, and vegetables.

THREATS AND CONSERVATION ISSUES

- Industrialization
- Encroachment
- Poaching
- Sand mining
- Overfishing using micro-mesh nets
- Habitat alteration
- Excessive congregation and movement of sheep and cattle during summer nesting season
- Excessive human activities
- Unethical photography

Hunting and poaching of birds and other aquatic wildlife like otters, crocodiles, and turtles is a prominent threat. In River Tungabhadra downstream from the reservoir, some miscreants use dynamite to hunt fish, which kills all the aquatic fauna. Sometimes birds are caught up in fishnets and die.

During the breeding season in summer, many species such as Black-winged Stilt, Small Pratincole, Oriental Pratincole, Little Ringed Plover, Indian Courser, and Chestnut-bellied Sandgrouse breed on islands which come up when the water is used up for irrigation. Trampling of eggs and small chicks by cattle, sheep, humans, and vehicles is the main threat to these ground-nesting birds.

KEY CONTRIBUTORS

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